SUPREME COURT OF THE UNITED STATES.

No. 108.

WILLIAM H. SEYMOUR, AND LAYTON S. MORGAN, PLAINTIFFS IN ERROR,

v.

CYRUS H. M'CORMICK.

IN ERROR TO THE CIRCUIT COURT UNITED STATES, FOR THE NORTHERN DISTRICT OF NEW YORK.

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United States of America, *ss.*

The President of the United States of America, to the Judges of the Circuit Court of the United States, of the Second Circuit, and the Northern District of New York: Greeting:

Because in the record and proceedings, and also in the rendition of a judgment in a plea, which is in the said Circuit Court, for the Northern District of New York, before you, between Cyrus H. McCormick, plaintiff, and William H. Seymour and Dayton S. Morgan, defendants, manifest error hath happened to the great damage of the said William H. Seymour and Dayton S. Morgan, as by their complaint appears; and it being fit that the error, if any there hath been, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, you are hereby commanded, if judgment be therein given, that then, under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you have the same at Washington, on the first Monday of December next, in the said Supreme Court, to be then and there held, that the record and proceedings aforesaid being inspected, the said Supreme Court, may cause further to be done therein to correct that error, what of right, and according to the law and custom of the United States should be done.

Witness the Honorable Roger B. Taney, Chief Justice of the said Supreme Court of the United States, this third Monday of February, in the year of our Lord one thousand eight hundred and fifty-five, and of the Independence of the United States, the seventy-ninth.

AUG. A. BOYCE,
Clerk of the Circuit Court of the United States, for the Northern District of New York, in the Second Circuit.

H. R. SELDEN,
Attorney for Plaintiffs in Error.

Endorsed: Supreme Court of the United States. William H. Seymour and Dayton S. Morgan *v.* Cyrus H. McCormick. Writ of Error. H. R. Selden, plaintiffs' attorney. Allowed, June 20, 1855, N. K. Hall, District Judge of the United States, Northern District of New York. Received by me, and filed June 20, 1855. A. A. Boyce, Clerk.

United States of America, *ss.*

To Cyrus H. McCormick, greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, to be holden at Washington, on

the first Monday of December next, pursuant to a writ of error, filed in the Clerk's Office of the Circuit Court of the United States, for the Second Circuit and Northern District of New York. Wherein Willian H. Seymour and Dayton S. Morgan are plaintiffs, and you are defendant in error, to show cause, if any there be, why the judgment in the said writ of error mentioned, should not be corrected, and speedy justice should not be done to the parties in that behalf.

Witness the Honorable Roger B. Taney, Chief Justice of the said Supreme Court of the United States, this third Monday of February, in the year of our Lord 1855.

N. K. HALL,
District Judge, United States, Northern District of New York.

Supreme Court of the United States.

WILLIAM H. SEYMOUR & DAYTON S. MORGAN,
Plaintiffs in Error,
v.
CYRUS H. MCCORMICK, Defendant in Error.

Northern District of New York, *ss.*

Henry R. Selden being duly sworn, says, that on the 25th day of June, 1855, he served the foregoing citation upon Cyrus H. McCormick, the defendant in error, by showing the same to him, and at the same time delivering to, and leaving with him a copy thereof, at the City of Rochester, in the County of Monroe, in said Northern District of New York.

HENRY R. SELDEN.

Subscribed and sworn this 5th day of July, 1855, before me,
A. A. BOYCE,
Clerk.

Endorsed: Supreme Court of the United States. William H. Seymour and Dayton S. Morgan *v.* Cyrus H. McCormick. Citation on writ of error. H. R. Selden, plaintiffs' attorney. I admit service of the within citation, this 25 day of June, 1855. Edw. N. Dickerson, of counsel for defendant in error. Received by me, and filed July 5, 1855. A. A. Boyce, Clerk.

[1] Circuit Court of the United States for the Northen District of New York.

CYRUS H. MCCORMICK
v.
WILLIAM H. SEYMOUR and
DAYTON S. MORGAN.

United States of America, Northern District of New York, *ss.*

I, Augustus A. Boyce, Clerk of the Circuit Court of the United States of America, for the Northern District of New York, in the

Second Circuit, do hereby certify to the Supreme Court of the United States, that the judgment record and bill of exceptions hereunto
[2] annexed are true transcripts of their respective originals remaining on the files of my office in the above entitled cause.

In testimony whereof, I have hereunto subscribed my name and affixed the seal of the said Circuit Court, this 15th
[SEAL.] day of August, one thousand eight hundred and fifty-five, and of the Independence of the United States of America, the eightieth.

AUG. A. BOYCE,
Clerk.

In the Circuit Court of the United States, for the Northern District of New York.

Pleas before the Judges of the Circuit Court of the United States, for the Northern District of New York, at the court house in the village of Canandaigua, of the Tuesday next after the third Monday
[3] in June, in the year of our Lord one thousand eight hundred and fifty. Witness the Honorable Samuel Nelson and the Honorable Alfred Conkling, Judges of the said Court.

AUGUSTUS A. BOYCE,
Clerk.

Northern District of New York, *ss.*

Be it remembered, that, heretofore, to wit, on the 23d day of August, in the year of our Lord one thousand eight hundred and fifty, as yet of the said term of June, in the year of our Lord one thousand eight hundred and fifty, before the Judges of the said Court, at the court house aforesaid, came Cyrus H. McCormick, of Steele's
[4] Tavern (P. O.), in the County of Rockbridge, and State of Virginia, and a citizen of the said State of Virginia, by Samuel Blatchford, his attorney, and brings into the said Court, before the said Judges, then and there according to the rules of said Court, his certain declaration against William H. Seymour and Dayton S. Morgan, of Brockport, in the County of Monroe, in said Northern District, and citizens of the State of New York, of a plea of trespass on the case; which said declaration follows in these words, that is to say:

Northern District of New York, *ss.*

[5] Cyrus H. McCormick, of Steele's Tavern (P. O.) in the County of Rockbridge, and State of Virginia, and a citizen of the said State of Virginia, plaintiff in this suit, by Samuel Blatchford, his attorney, comes into this Court, by filing his declaration, pursuant to the statute in such case made and provided, and complains of William H. Seymour and Dayton S. Morgan, of Brockport,

in the County of Monroe, in said Northern District, and citizens of the State of New York, defendants in this suit, of a plea of trespass on the case:

[6] For that whereas heretofore, and before and at the time of the making of the letters patent first hereinafter mentioned, and before the committing of the several grievances hereinafter mentioned, to wit, on the twenty-first day of June, in the year of our Lord one thousand eight hundred and thirty-four, the said plaintiff was the true, original, and first inventor of certain new and useful improvements in the machine for reaping all kinds of small grain, mentioned and fully described in the letters patent first hereinafter mentioned, which new and useful improvements were not known [7] or used before his said invention or discovery, and were not, at the time of his application for a patent therefor, as hereinafter mentioned, in public use, or on sale with his consent or allowance; and the said plaintiff, being so as aforesaid the inventor of the said improvements, and being also a citizen of the United States, on the said twenty-first day of June, one thousand eight hundred and thirty-four, and before the committing of the several grievances hereinafter mentioned, upon due application, did obtain certain letters patent for said improvements, in due form of law, under the seal of the Patent [8] Office of the United States, bearing date the twenty-first day of June, one thousand eight hundred and thirty-four, whereby there were granted to the said plaintiff, his heirs, administrators, or assigns, for the term of fourteen years from the said twenty-first day of June, one thousand eight hundred and thirty-four, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvements, as by the said letters patent, which the said plaintiff now here brings into Court, the date whereof is the day and year last aforesaid, fully appears.

[9] And the said plaintiff further says, that heretofore, and before and at the time of the making of the letters patent first hereinafter mentioned, and before the committing of the several grievances hereinafter mentioned, to wit, on the thirty-first day of January, in the year of our Lord one thousand eight hundred and forty-five, the said plaintiff was the true, original, and first inventor of certain other new and useful improvements in reaping machines, and upon his said patented reaping machine, mentioned and fully described in the letters patent first hereinafter mentioned, which last named new and useful [10] improvements were not known or used before his said last named invention or discovery, and were not, at the time of his application for a patent therefor, as hereinafter mentioned, in public use or on sale with his consent or allowance, contrary to the acts of Congress in such case made and provided; and the said plaintiff, being so as aforesaid the inventor of the said last named improvements, and being also a citizen of the United States, on the said thirty-first day of January, one thousand eight hundred and forty-five,

[11] and before the committing of the several grievances hereinafter mentioned, upon due application did obtain certain letters patent for said last named improvements, in due form of law, under the seal of the Patent Office of the United States, bearing date the thirty-first day of January, one thousand eight hundred and forty-five, whereby there were granted to the said plaintiff, his heirs, administrators, or assigns, for the term of fourteen years from the said thirty-first day of January, one thousand eight hundred and forty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said last-named [12] improvements, as by the said last-named letters patent, which the said plaintiff now here brings into Court, the date whereof is the day and year last aforesaid, fully appears.

And the said plaintiff further says, that since the granting of said last-named letters patent to him as aforesaid, he has, in exercise of the right and liberty granted by the said last-mentioned letters patent, used, worked, exercised, and put in practice the said last-named improvements, and made and manufactured reaping machines by means of and in pursuance of the said last-named improvements, and [13] has vended and sold such articles and things as, by means of the said last-named letters patent, he was so entitled to as aforesaid.

Yet the said defendants, well knowing the premises aforesaid, but contriving, and wrongfully and injuriously intending to injure the said plaintiff, and to deprive him of the profits, benefits, and advantages which he might and otherwise would have derived and acquired from the using, exercising, and putting in practice of the said last-named improvements, and from the making and vending such reaping machines as aforesaid, after the granting of the said last-named [14 letters patent, and during the term of fourteen years therein mentioned, and before the commencement of this suit, to wit, on the first day of June, one thousand eight hundred and forty-nine, and on divers days and times between that day and the commencement of this suit, and within the said Northern District of New York, to wit, at Brockport aforesaid, wrongfully, unjustly, and without the leave or license, and against the will of the said plaintiff, did make, [15] manufacture, and construct, and cause to be made, manufactured, and constructed, and did vend to others to be used, and cause to be vended to others to be used, divers, to wit, three hundred reaping machines, and divers, to wit, ten thousand parts of reaping machines, made upon the plan of, and according to, and by means of, and having and embracing the principles of the inventions and improvements fourthly and fifthly claimed in the schedule or specifications to the said last-named letters patent, annexed, and in breach of the said last-named letters-patent, and of the privilege, right, and liberty thereby granted, as aforesaid, and in violation of [16] the statutes of the United States in such case made and provided.

And also, for that whereas, heretofore, and before and at the time of the making of the letters patent hereinafter mentioned, and before the committing of the several grievances hereinafter mentioned, to wit, on the twenty-third day of October, in the year of our Lord one thousand eight hundred and forty-seven, the said plaintiff was the
[17] true, original, and first inventor of certain new and useful improvements in reaping machines, and upon his said reaping machine, before patented as aforesaid, mentioned and fully described in the letters patent hereinafter mentioned, which last-named new and useful improvements were not known or used before his said last-named invention or discovery, and were not, at the time of his application for a patent therefor, as hereinafter mentioned, in public use or on sale with his consent or allowance, contrary to the provisions of the acts of Congress in such case made and provided; and the said plaintiff, being so as aforesaid the inventor of the said last-named improvements, and being also a citizen of the United States, on the said twenty-third day of October, one thousand eight hundred and
[18] forty-seven, and before the committing of the several grievances hereinafter mentioned, upon due application, did obtain certain letters patent for said last-named improvements, in due form of law, under the seal of the Patent Office of the United States, bearing date the twenty-third day of October, one thousand eight hundred and forty-seven, whereby there were granted to the said plaintiff, his heirs, administrators, or assigns, for the term of fourteen years from the said twenty-third day of October, one thousand eight hundred and forty-seven, the full and exclusive right and liberty of making,
[19] constructing, using, and vending to others to be used, the said last-named improvements, as by the said last-named letters patent, which the said plaintiff now here brings into Court, the date whereof is the day and year last aforesaid, fully appears.

And the said plaintiff further says, that since the granting of said last-named letters patent to him, as aforesaid, he has, in exercise of the right and liberty granted by the said last-mentioned letters patent, used, worked, exercised, and put in practice the said last-named improvements, and made and manufactured reaping machines by means of, and in pursuance of, said last-named improvements, and has vended and sold such articles and things as, by means of the
[20] said last-named letters patent, he was so entitled to as aforesaid.

Yet the said defendants, well knowing the premises aforesaid, but contriving, and wrongfully and injuriously intending to injure the said plaintiff, and to deprive him of the profits, benefits, and advantages which he might and otherwise would have derived and acquired from the using, exercising, and putting into practice of the said last-named improvements, and from the making and vending such reaping
[21] machines as aforesaid, after the granting of the said last-named letters patent, and during the term of fourteen years

therein mentioned, and before the commencement of this suit, to wit, on the first day of June, one thousand eight hundred and forty-nine, and on divers days and times between that day and the commencement of this suit, and within the said Northern District of New York, to wit, at Brockport aforesaid, wrongfully, unjustly and without the leave or license, and against the will of the said plaintiff, did make, manufacture, and construct, and cause to be made, manufactured, and
[22] constructed, and did vend to others to be used, divers, to wit, three hundred reaping machines, and divers, to wit, ten thousand parts of reaping machines, made upon the plan of, and according to, and by means of, and having and embracing the principles of the said last-named inventions and improvements, and in breach of the said last-named letters patent, and of the privilege, right, and liberty thereby granted as aforesaid, and in violation of the statutes of the United States in such case made and provided.

Whereby, and by means of which grievances, the said plaintiff has
[23] been greatly injured, and deprived of great profits, which he might and otherwise would have derived from said several inventions and improvements, to wit, at Brockport aforesaid, and has sustained actual damages to a large amount, to wit, the sum of thirty thousand dollars.

By means of which said several premises, and by force of the statutes aforesaid, an action has accrued to the said plaintiff, to recover of the said defendants the said actual damages, and such additional amount, not exceeding in the whole three times the amount of the said actual damages, as the Court may see fit to order and adjudge.

[24] Yet the said defendants, though often requested, have never paid the same, or any part thereof, to the said plaintiff, but have refused and still refuse so to do, to the damage of the said plaintiff of thirty thousand dollars, and therefore he brings suit, &c.

And it is suggested to the Court now here, that the said plaintiff gave oyer in the words and figures following, to wit, of the letters patent of January 31st, 1845, and of the letters patent of October 23d, 1847, and of the specifications to said two letters patent severe-
[25] rally annexed, and of the specifications annexed to the letters patent of June 21st, 1834, in said declaration mentioned.

Oyer.

Letters patent of January 31st, 1845.—No. 3895.

The United States of America, to all to whom these letters patent shall come:

Whereas Cyrus H. McCormick, Rockbridge, Virginia, has alleged that he has invented a new and useful improvement in reaping machines, which he states has not been known or used before his appli-

cation; has made oath that he is a citizen of the United States, that
[26] he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said Cyrus
[27] H. McCormick, his heirs, administrators, or assigns, for the term of fourteen years from the 31st day of January, one thousand eight hundred and forty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Cyrus H. McCormick in the schedule hereto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made
[28] patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand at the City of Washington this 31st day of January, in the year of our Lord one thousand eight hun-
[L. S.] dred and forty-five, and of the independence of the United States of America the sixty-ninth.

J. C. CALHOUN,
Secretary of State.

Countersigned and sealed with the seal of the Patent Office.

HENRY L. ELLSWORTH,
Commissioner of Patents.

Letters patent of October 23d, 1847.—No. 5335.

The United States of America, to all to whom these letters patent shall come:

[29] Whereas Cyrus H. McCormick, Steele's Tavern, Virginia, has alleged that he has invented a new and useful improvement in reaping machines, which he states has not been known or used before his application; has made oath that he is a citizen of the United States, that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not to the best of his knowledge and belief been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive pro-
[30] perty in the said improvement, and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said Cyrus H. McCormick, his heirs, administrators, or assigns, for the term of fourteen years from the 23d day of October, one thousand eight hundred and forty-seven, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Cyrus H. McCormick in the schedule hereunto annexed, and is made part of these presents.

[31] In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

[L. S.] Given under my hand at the City of Washington this 23d day of October, in the year of our Lord 1847, and of the independence of the United States of America the seventy-second.

JAMES BUCHANAN,
Secretary of State.

Countersigned and sealed with the seal of the Patent Office.
EDMUND BURKE,
Commissioner of Patents.

Specification of Letters Patent of June 21st, 1834.

[32] The schedule referred to in these letters patent, and making part of the same, containing a description in the words of the said Cyrus H. McCormick himself, of his improvement in the machine for reaping all kinds of small grain.

To all to whom these presents shall come:

Be it known that I, Cyrus H. McCormick, of Rockbridge County and State of Virginia, have invented a new and useful improvement in reaping all kinds of small grain, and that the following is a full and exact description of the construction and operation of the said machine as invented or improved by me:

[33] Upon a frame of wood is to be constructed a platform of about six feet in width by about four or five feet in length. From the back of the platform projects a tongue of about ten or eleven feet, to the end of which is secured a cross-bar, to attach the swingle-trees, by which the horses pull with their heads directed towards the platform; near which, at a proportionate distance from the cross-bar, are fastened to an upright rising from the tongue, two hooks, by staples to said upright, are projecting towards each horse.

[34] These hooks fasten into the hame hooks of each horse, though the machine will be found to work better by using the hook to the left horse, the one ridden by the boy directing their movements. One horse may work the machine from this side by substituting shafts for the tongue. On the right hand of the platform are to project in front, two pieces of the frame, about one and a quarter

foot, and about one foot apart on each side of this projection is to be secured a broad piece of wood by a screw bolt passing through it
[35] and the projection of the frame. From the end of this broad piece, nearest the platform, rises a circular brace, projecting forwards, and secured to the reel-post by a movable screw-bolt, to allow of advancing or drawing back, as the adjustment of the cutting may require. About three-quarters of a foot on the other end is a movable screw bolt, passing through both pieces, also allowing for a rise or fall in adjusting the height of cutting, and at about the same distance further on is to play an axis of a wheel, to be hung
[36] between said pieces. At a short distance in front of this axis are to be screwed an arm on each side, projecting towards the middle, where they are united, and serve to throw the stalks of the grain towards the cutting apparatus. This triangle is to be movable on its screws also, and it may be removed altogether for the purpose of inserting shafts; so that the machine may be drawn by one horse in this manner: The two head-pieces are to be lengthened,
[37] as also the curved brace projecting towards all of them, about three or four feet; the two broad pieces will be connected at their ends by a bar for the swingle-tree; and rising from the right hand one, near the end, an upright connects it with the curved brace; and by the side of this upright rises another, secured to its place, to a height sufficient to clear the reel; from this top a brace passes across the reel to the opposite post; below the inner shaft, from the swingle-tree end, is secured a long bow or brace, projecting out somewhat, and continuing along the direction of the shaft to the front of
[38] the horse, where it passes round and joins to the other shaft, which has been left purposely longer; the object of this bow is to throw the stalks inwards towards the cutting apparatus, instead of the triangle removed. Some other braces may be used to strengthen this part of the machine, similar to one which must pass from the junction of the curved brace with the reel-post, obliquely towards that end of the opposite head-piece nearest the front of the cutter; from the top of the reel-post a brace will also pass to the
[39] foot of the upright projection on the tongue. On the opposite side of the machine is another reel-post, rising from a projection of the platform, and supported by a brace on each side, connected to the top by a movable screw-bolt, and extending, one to the end of a piece attached to the projection; on the outside of which piece, and rising in the same direction, may be secured a bow, in order to more effectually divide the grain before it comes to the reel from the platform, by a movable screw, and extending forward
[40] about six feet, serving to regulate the width of the swath; the other brace, to the end of the platform next the horses, where, about half way up, it is joined by another brace, continuing it on to the cross-bar at the draught end of the tongue. This end of the platform is to be closed by a strip of cloth, stretched along it

and as high as the stalks. The tongue is to be supported by the horses by means of a pole passing across their backs between them,
[41] and resting on pad-saddles; from this pole a chain passes to the tongue below, and suspends it to the desired height. On the axis, hung between the head-pieces, is a wheel of about two feet diameter, having the circumference armed with teeth to hold to the ground by. On the right of this wheel is another of about thirteen inches diameter, or containing thirty teeth on the same axis, having a width on the circumference for the reception of a band; and on the right side are to be the teeth or cogs, working in a smaller cog-wheel
[42] of about three and a half inches in diameter, or nine cogs, secured to an angle sloping back towards the front of the platform, where is secured another cog-wheel of about eleven inches in diameter, or containing twenty-seven teeth, working into another of about three and a half inches in diameter, or nine cogs, attached to an upright double crank, passing from the curved brace down to the broad piece below. These cranks are in a right line, projecting on opposite sides of the axis, and in a line with the front edge of the platform. To the lower of these cranks is attached, by a joint near
[43] the crank, having a wooden pin, a long cutter of steel, grooved or notched on its lower edge like a reaping-hook, with the grooves running in a line towards the right of the machine. This blade is attached to the frame-piece, below the edge of the front of the platform, by movable tongues or slips of metal, the bolt securing it to said frame-piece acting as a pivot, and that through the blade likewise, so that the motion is described in part of a circle.
[44] This motion, when the stalks are presented, cuts them through. Above this cutter slides another long plate, to the upper crank, of the same length, and secured in the same manner, but, instead of the fine teeth used in the lower plate, these teeth are long, say about one and a half inch, and about the same distance apart. They are to project in a line sloped in an opposite direction to the grooves in the cutter below, and their motion, in sliding backwards and forwards, is also contrary, thereby collecting the stalks as they come in contact with these teeth, and force them across the
[45] teeth in the cutter below, thereby greatly assisting in the act of cutting them through. The crank working this blade may be dispensed with in some cases, and the teeth made fast above the cutter, and bent over its edge and under, some distance, so that the cutter will then work against them, and produce the same effect. On the upper end of each reel-post is a groove or long mortice, having a number of holes through the sides, for the reception of an adjusting pin; on this pin, and through the groove, work the end of
[46] the axis of the reel, having, on the right end, a pulley of about twelve inches diameter, secured to the axis, and worked by means of a belt from the pulley-wheel below on the axle of the wheel working in the ground. The reel is composed of two or more

cross arms at each end of the axle, projecting about three feet, and connected at their ends by a thin board of about six inches in width, which, by the arrangement of the arms, runs in somewhat a spiral direction along the axis, though it might be parallel, the right end bearing up first upon the grain. This reel, by the motion given by
[47] the strap, as the horses advance, bears the stalks, as they are projected inward by each end of the termination of the platform, upon the cutter, and, when separated, hands them on the platform, which, advancing till sufficient quantity is collected, is discharged, as often as may be required, by a hand with a rake at the right end of the platform. On the left end of the platform, is a wheel of about fifteen inches diameter, set obliquely, bending under the platform, to avoid breaking down the stalks, on an axle, that may be raised or lowered by two movable bolts, as the cutting may
[48] require, corresponding with the opposite sides. The projection of the frame at this end is made sufficiently wide to bear off the grain from the wheel.

My claim is for the arrangement of the several parts so as to constitute the above described machine, and I particularly claim the method of cutting by means of a vibrating blade, operated by a crank, having the edge either smooth or with teeth, either with stationary wires, or pieces above and below and projecting before it, for the
[49] purpose of staying or supporting the grain whilst cutting, or using a double crank, and another blade or vibrating bar, as above described, having projections before the blade or cutter on the upper side, both working in contrary directions, thereby lessening the friction and liability to wear, by dividing the motion necessary for one between the two, and improving the principle of cutting by gathering and holding the grain to the cutter, the projections standing at a proper angle to said cutter; also the method of securing them.

I also claim the method of gathering and bringing the grain back
[50] to the cutter, and delivering it on the apron or platform, by means of a reel, as described above, movable to any height required to suit the grain, and the platform to hold the grain until a sufficient quantity shall have been collected for a sheaf, more or less; likewise the mode of changing the machine for cutting either high or low, as described above; also, the method of dividing and keeping separate the grain to be cut from that to be left standing, and the method of attaching the tongue when behind to the breast of the horse, to enable him to guide the machine with accuracy.

[51] In testimony that the above is a true and correct description of the use and construction of my machine as invented by me, I have hereunto set my hand, this nineteenth day of June, 1834.

CYRUS H. McCORMICK.

Witnesses—HENRY STONE,
ROBERT CLARK.

Specification of Letters Patent of January 31st, 1845.

To all whom it may concern:

Be it known that I, Cyrus H. McCormick, of the County of Rockbridge, and State of Virginia, have invented certain new and useful
[52] improvements upon my patented reaping machine, and I do hereby declare that the following is a full and exact description of the construction and operation of the same; reference being had to the annexed drawings, making a part of this specification.

The first improvements which I would describe are in the cutting apparatus, as follows, viz., the blade case, A, A, A, A, A 2, in which the blade, B, B, B, B 2, plays and is secured, is a straight plate of iron, the length of the blade, say 1¼ inches wide, ⅜ inch thick on the back,
[53] and less than ⅛ inch on the front edge, as at A, fig. 3; to the upper side of this plate is riveted a back, A 1, fig. 3 and 5, say $\frac{3}{16}$ inch thick (thickness of the blade), and ⅝ inch wide, leaving a width of ⅜ inch in front of the back, as at A 2, fig. 3, for the blade to act upon. The end of this plate next to the crank is widened towards the front, as at A 2, figs. 5 and 9, and turned up
[54] so as to receive and fit the end of the blade (giving it room to act), which is also extended in width, as hereafter described. The other end of the blade is also widened in like manner.

At the ends, the width of the blade B is extended in front, as at 44, figs. 4, 5, say to 1¾ inch, being twice its width at the cutting part, so that the edge of the blade, though projecting over the case ¼ inch (as at B 1, fig. 3), is firmly and sufficiently supported by the ends, and prevented from a tendency to wear and turn down from the pressure of the cutting.

[55] The teeth of the blade are similar to those of a common sickle, except that their angle is alternately reversed in spaces of 1¼ inch (more or less), as at B 3, fig. 4, on an inverted section, the object of which is to equalize the cutting in both directions as the blade vibrates, and more effectually to keep the blade free from choking by cutting itself clear of blades of wheat, &c., in both directions.

The blade-case is secured to the two projections of the frame of
[56] the platform C, at 7, 7, 7, 7, figs. 1 and 5, say 3 or 4 inches forward of the front piece C, of said platform, and it is supported between, at suitable distances apart, by two or three iron beams, *e*, as shown in the cross-section, fig. 3, screwed fast to the front piece of the platform (C), and so bent (downward) as to let straw or blades that may get in work out.

The fingers D, D, D, 27 in number (more or less), are made of bars of wrought iron (but might be cast), about ⅜ inch square, one end of
[57] which is widened into a shape resembling a spear. These fingers are made fast in the frame of the platform C, and

extend forward above the blade, so that the hinder angle (d, fig. 5), of the spear is just behind the serrated edge b, of the blade B, thereby forming an acute angle between the edge (b), of the blade, and the shoulder (d) of the spear, by which the grain is prevented from yielding to the touch of the blade (B), as it vibrates, and is held fast, so that the cutting is insured, and that too, dispensing with
[58] the under part of the finger (as with the double bearer or finger), on which blades, grass, &c., are liable to lodge and choke the machine. The fingers are intended to fit pretty close to the edge of the blade, and to be bent up a little from the back, to prevent choking, as at B 1, B 2, fig. 3. The blade may either act on a level with the upper surface of the platform, or below it, as at present constructed.

Next to the driver, F (or connecting rod), is made of two pieces,
[59] F 1, F 2, put together with screw-bolts, and so hollowed out in the inside (as at f, f, Fig. 8) as to receive round (or cylindrical) followers, G, G, G, in which the wrist of the crank (I, I, I), revolves, to be kept tight on the crank of the key, 10, fig. 6, instead of the flat ones, by which arrangement they are enabled to roll in the driver so as to accommodate themselves to any angle of the crank, varied by changing the height of cutting, thereby dispensing with extra followers, to suit different sets of the machine, and the
[60] trouble of changing them. The machine is at present constructed for two heights of cutting, 8 and 10 inches (might have more variations), which is effected on the out or tongue side by two joints in the framework, one at the crank or connection of the hounds (N, N, and platform (C), Y, V, v, the other at the connection of the hounds and tongue (P) O, o, Z, the two bolts, Y and Z, being pivots to the two joints, and the axle of the main ground-wheel at A
[61] (in the two hounds), a pivot in which to turn the frame to effect the change required. When the bolts V and O are in the lower holes of the hounds and tongue, the height of the blade from the ground will be eight inches (which is the lower set). The point of the tongue being fixed and immovable by the breast piece, 2, made fast to the horse's hames, by removing the bolts V and O into the holes v and o of the hounds and tongue upon the pivot A, as before described, the hounds, together with the wheels, crank, and other framework attached to them will turn, sinking the joint,
[62] O o Z, and raising the joint Y V v, and consequently the blade to 10 inches. By this operation, the horizontal position of the platform and of the blade and driver, they being attached by a pin at 11, 11, figs. 1, 5, 6, and 11, is preserved, whilst the turning of the hounds, crank, &c., as aforesaid, varies the angle of the crank to the blade and driver, and but for the rolling of the followers in the driver, as before described, would twist the blade.

The application of the fly wheel, H, upon the axle of the crank,

[63] I, above the wrist, by which means the weight of the driver is counterbalanced (one side of the wheel being heavier than the other), the changes of action in the blade regulated and effected with more ease, less friction and strain upon the machinery, and consequent liability to wear and get out of order, and from which uniformity of action and resistance, the action of the blade and wheels is kept up in situations where otherwise it would fail by reason of the wheels slipping and not revolving.

[64] The manner of ungearing the machine by the lever, J, so that when it is moving, and not cutting, the operation of the wheels and blade can be stopped conveniently. This is effected by screwing the lever to the top of the out hound by a screw-bolt, B, which serves as a fulcrum; one end of the lever extends say 4 or 5 inches back from the fulcrum to a suitable place, and is suitably shaped as a box, in which is placed and acts the lowér end of the axle (g, at the pinion) of the wheel L, that operates the crank, and on and near the lower end of which said axle is a pinion, m (of 9

[65] teeth), that gears into the master cog-wheel, P, of 30 teeth. At some 12 inches before the fulcrum is a loose pin, J 2, put through the lever and into the hound, which holds it firmly to its place. To ungear the wheels it is then only necessary to take out the pin and move the end of the lever in towards the master cog-wheel, which moves the other end with the pinion out of gear, and

[66] the pin being put again into the lever, and a different hole in the hound, it is kept out of gear until changed as before. This is important in moving the machine from place to place, and also in cutting around a piece of grain; it sometimes does not suit so well to cut on one side as on others.

The divider, K, is an extension of the frame on the lefe side of the platform, say three feet before the blade, for the purpose and so constructed as to effect a separation of the wheat to be cut, from that to be left standing, and that whether tangled or not. E is a

[67] piece of scantling, say three feet long and three inches square, made fast to a projection of the platform by two screw-bolts. To the point of this piece, at K, is made fast, by a screw or bolt, L, a bow of tough wood, the other end of which is made fast in the hinder part of the platform at R, and it is so bent as to be about 2½ feet high at the (left) reel-post, and about 9 inches out from it with

[68] a regular curve. The dividing iron, M, is an iron rod of a peculiar shape, made fast to the point of the same piece, E, and by the same screw-bolt that holds the bow, K. From this bolt the iron rises towards the reel, S, at an angle of say 30°, until it reaches it; then it is bent so as to pass under the reel as far back as the blade, and to fit the curve of it (the reel). From the bolt in the point aforesaid, the other end of this iron extends say 9 inches along

[69] the inside of the piece E, where it is held by another screw-bolt, M, and when it has a groove (or slot) in it to admit the

other ends being raised or lowered (turning on the point screw, K, as a pivot) to suit the height of the reel. By means of the bow to bear off the standing wheat, and the iron to throw the wheat to be cut within the power of the reel, the required separation is made complete.

The manner of constructing the hounds, N, N (or main wheel-pieces), and of connecting them with the tongue (P), and forming the
[70] movable joint, O o Z, as before described, corresponding with the joint Y V v, in changing the height of the cutting, by which construction, too, the frame is greatly simplified and strengthened, sufficiently so to control the action of the machine firmly and permanently (the inside hound operating as a direct and strong brace to it) by means of the tongue (P), which is extended say 10 feet forward, so as to balance the machine upon its two ground-wheels, T and U, and is attached to the breast-piece, Q, as before described.

[71] The reel-post, R (on the left side of the machine), instead of being placed before the blade standing perpendicularly, and braced as before, is set say 9 inches behind the blade, as at W, and so leaned forward as to bring the middle of it, or point R, at which the end of the reel is supported, to its former perpendicular, thereby, too, so putting the top of the post V forward as to admit of being braced directly to the tongue, P, by means of the tongue post,
[72] T, for the purpose of raising the end of it a little), by the brace, S, passing partly over and in front of the reel. By this arrangement, first, the bracing, as described, is effected with much more simplicity and strength; and secondly, the lower end of the post (at U) being behind the blade, and crooked out as at R 2 (the end of the dividing iron at M being bent inward), all tendency of straws hanging upon it (the post) and interfering with the cutting is removed.

The top of this post, and front brace (S), might be dispensed with by making the frame of the platform heavier and stronger, but it is
[73] believed not so well as at present constructed.

The manner of attaching the small ground wheel to the left side of the platform, as at U, fig. 2, by having different holes in the frame, as at U 1, for varying the height (by changing the axle of the wheel in them) of the cutting and cutting away the under side of the frame at n, behind the axle, to prevent the collecting of earth and gravel by the upward motion of the wheel, so as to stop its revolution.

[74] The manner of attaching the sand-board, W w, to the frame, between the main ground-wheel and the other wheels, driver, &c., by constructing it of two pieces at right-angles to each other; the piece W being placed between the ground-wheel and master cog-wheel, and made fast by the bolt V; the other post, W, passing between the ground-wheel and driver, and made fast to the brace, q.

And, lastly, the straw-board, X, made fast to the wheel-post r

(at r), and to the brace (at q), for the purpose of keeping the grain from the wheels, driver, &c.

[75] I claim, 1st, the curved (or angled downward, for the purpose described) bearer, for supporting the blade in the manner described.

2d. I claim the reversed angle of the teeth of the blade, in manner described.

3d. I claim the arrangement and construction of the fingers (or teeth for supporting the grain) so as to form the angular spaces in front of the blade, as and for the purpose described.

4th. I claim the combination of the bow, L, and dividing iron, M, for separating the wheat in the way described.

5th. I claim setting the lower end of the reel-post, R, behind the [76] blade, curving it at R 2, and leaning it forward at top, thereby favoring the cutting, and enabling me to brace it at top by the front brace (S), as described, which I claim in combination with the post.

CYRUS H. McCORMICK.

Witnesses: T. C. DONN,
R. J. A. CULVERWELL.

Specification of Letters Patent, of October 23d, 1847.

The schedule referred to in these letters patent, and making part of the same.

To all to whom these presents shall come:

Be it known that I, Cyrus H. McCormick, of Steele's Tavern, in [77] the County of Rockbridge, and State of Virginia, have invented new and useful improvements in the reaping machine formerly patented by me, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which figure 1 is a perspective view, figure 2 a plan, and figure 3 a side elevation. The same letters indicate the parts in all the figures.

[78] The reaping machines heretofore made are defective in the following particulars: The driving wheel is placed forward of the mechanism that operates the vibrating sickle, and so far forward as to leave too much of the weight of the machine back of the driving wheel, and therefore tending to strain the horses as well as the frame of the machine; and the gearing which communicates motion to the crank is placed back of the driving wheel, which is therefore subject to be clogged by sand, dirt, straw, &c.; and in consequence of the relative position of the various parts, the attend-

[79] ant is obliged to walk on the ground, beside the machine, to rake the cut grain from the platform, as it is delivered and laid thereon by the reel. These defects, which have so much retarded the introduction into practical and general use of reaping machines, I have remedied by my improvements, the nature of which consists in placing the driving wheel further back than heretofore, and back of the gearing which communicates motion to the sickle, which is placed in a line back of the axis of the driving wheel, the connection being formed by means of a lever and connecting rod,

[80] thus placing the cog gearing which operates the crank forward of the driving wheel for the purposes described, and also bringing the driving wheel sufficiently far back to balance the frame of the machine with the raker on it, and make room for him to sit or stand on the frame back of the driving wheel, and with his back to the horses, so that from this position, and the placing of the reel farther forward than heretofore, and making it shorter, together with the employment of a wheel board or guide which prevents the grain

[81] from passing under the machine or into the gearing, thereby avoiding the necessity of a long reel, he can rake off the grain with a sweep of his rake (having the free use of his body and arms), in the curve of which his body is the centre, and thus lay the grain on the ground with the heads outwards, at right angles to the swath, which cannot be done if the raker walks on the ground by the side of the machine, as heretofore, for then the sweep which he makes with his rake, relatively to the motion of the machine,

[82] lays the grain on the ground with the heads oblique instead of at right angles with the swath, as with the improved mode. In the accompanying drawings (M) represents a flat beam, (called a finger piece,) to a part of the forward edge of which are secured the fingers, (P,) such as are used in the machine heretofore patented by me, and under these fingers is arranged the vibrating sickle, which

[83] receives its vibrating motion in manner to be hereafter described. The finger piece is firmly attached at one end to the two oblique hounds, (C) and (D,) which run towards each other and are bolted to the tongue, (A,) the forward end of which passes through the breast piece, (B.) The team is harnessed to the tongue, hounds, and breast piece, in the usual or any desired manner. The axle of the driving wheel (L) has its bearings in the two hounds, so near the back end thereof as just to leave room for the wheel to run clear of the finger piece; and to the outer end of the axle of the driving wheel is attached a beveled master cog wheel, (l,) which

[84] communicates motion to a beveled pinion (l 1) on the lower end of an inclined arbor, to the upper end of which there is another beveled wheel, (F,) which communicates motion to the driver, pinion (H) on a vertical crank arbor (G) that has a fly-wheel (g) on it, between the crank and pinion. The crank arbor has its bearings in the outside hound and the oblique brace, (h,) and the inclined arbor

has its upper bearing in the oblique brace, and its lower end in a shifting lever, (m,) by means of which the pinion (l 1) can be thrown in and out
[85] of gear with the master bevel wheel (l.) When it is desired to reap, or move the machine without reaping, a connecting rod (n) from the crank extends horizontally to the forward end of a lever, (o,) which turns on a fulcrum pin (p) attached to the inside hound, and thence runs back to form a connection with the end of the sickle, (q,) by means of a short connecting rod, (r.) By this arrangement of parts the gearing is placed forward of the driving wheel, and motion is communicated from thence to the sickle back of
[86] the axis of the driving wheel, by the vibrating lever, thus placing the driving and supporting wheel back of the gearing, and far enough to balance the weight of the frame; and the attendant or raker is placed on a seat (J) over one end of the finger piece. This seat is attached to a seat post (N) which rises from the outside hound, and to the oblique brace (h), and it is braced also by the diagonal wheel brace (N), which runs down from the post to the finger bar (M), near to its junction with the inside hound. From
[87] this position, as represented in figure 1 of the drawings, the raker can get at the grain back of the wheel, and, by a natural sweep of his arms, deliver it on to the ground, at right angles to the swath, as shown in the figures. To give free scope to the arms of the raker, the reel (W) is made shorter than usual at that end, instead of overlapping or extending beyond the range of fingers; and to prevent the grain or straw from passing under the frame, or into the gearing which operates the sickle, there is what I denominate a
[88] wheel-board (w), that is, a curved board, the forward end of which is secured to the inside hound; the forward end is curved to force the grain inwards towards the reel, and then it runs back to the platform (Q), parallel with the plane of motion of the end of the reel. At the other end of the finger bar there is a separator (T), or long finger, which projects beyond the points of the fingers (P), to separate the grain that is to be cut; and to the points
[89] and top of this is attached a metal guide or support (U), which extends back to the sickle to support the grain while being cut. The outer edge of the separator runs out in a curved line, to force out the grain that is not to be cut, and effect a perfect separation of it from the cut grain. At this end of the platform there is a board (s) to prevent the cut grain from dropping out on that side, and at the back there is a cloth screen to prevent its dropping out in the rear. The reel (W) has its bearings at the outer end, in the end
[90] of a horizontal beam (V), which is attached to the frame that supports the *the* back screen, and further supported by braces, so as to avoid the use of a standard at that end, as heretofore, against which the grain strikes before it is separated. And the inner end of the reel has its bearing in a sliding-box, in a standard (I) attached to the outside hound and the diagonal brace (h), the

sliding-box having a tapped stem running up above the standard, with a screw-nut (X), by means of which may with convenience be
[91] tightened the belt that runs from the driving pulley (x 1), (on the axle of the driving wheel), over the pulley (y) on the axle of the reel.

What I claim as my invention, and desire to secure by letters patent, as improvements on the reaping machine secured to me by letters patent, bearing date the 21st of June, 1834, and the 31st of January, 1845, is placing the gearing and crank forward of the driving-wheel, for protection from dirt, &c., and thus carrying the
[92] driving-wheel further back than heretofore, and sufficiently so to balance the rear part of the frame and the raker thereon, when this position of the parts is combined with the sickle back of the axis of motion of the driving-wheel, by means of the vibrating lever, substantially as herein described. And I also claim, as my invention, the arrangement of the seat of the raker over the end of the finger-piece, which projects beyond the range of fingers, and just back of the driving-wheel, as described, in combination with and
[93] placed at the end of the reel, whereby the raker can sit with his back towards the team, and thus have free access to the cut grain laid on the platform and back of the reel, and rake it from thence on to the ground by a natural sweep of his body, and lay it in a range at right angles with the swath, as described, thereby avoiding unevenness and scattering in the discharge of the wheat, as well as accomplishing the same with a great saving of labor.

C. McCORMICK.

Witness—A. P. Brown,
J. M. Thayer.

Plea.

And the said William H. Seymour and Dayton S. Morgan, defend-
[94] ants in this suit, by Henry R. Selden their attorney come and defend the wrong and injury, when, &c., and say that they are not guilty of the said supposed grievances above laid to their charge in manner and form as the said plaintiff hath above thereof complained against them, and of this they, the said defendants, put themselves upon the country, and the said plaintiff doth the like, &c.

And it is suggested to the Court now here, that the defendant gave the following notices in writing of special matter to the
[95] plaintiff, thirty days before trial, under section 15 of the Act of Congress passed July 4th, 1836, entitled "An Act to Promote the Progress of the Useful Arts, and to repeal all Acts and parts of Acts heretofore made for that purpose."

First Notice of Special Matter.

And the said defendants in pursuance of the statute in such cases made and provided, give notice to the plaintiff, that they will insist

upon and give in evidence in bar of the plaintiff's right to recover, the following facts, viz.:

[96] That the said Cyrus H. McCormick was not the original and first inventor or discoverer of the alleged improvements in the machines for reaping all kinds of small grain mentioned, and described in the letters patent, first in the above declaration described and set forth, and therein claimed as new; and that the same or the most substantial and material parts thereof claimed in said letters patent as new, were invented by the Rev. Patrick Bell, of Scotland, and put in use by him in Farfarshire, Scotland, in the Kingdom of Great Britain, prior to the invention thereof by the plaintiff.

And particularly, that the method of cutting described in said [97] letters patent of the plaintiff, and the method of gathering and bringing the grain back to the cutter, and delivering it upon the apron or platform by means of a reel, as described in said letters patent of the plaintiff, and movable to any height required to suit the grain, and the method of attaching the tongue to the breast of the horse, described in said letters patent of the plaintiff, were all and each of them invented by the said Bell, and put in use by him in Farfarshire in Scotland, prior to the invention thereof by the plaintiff.

[98] And these defendants will also insist and give in evidence, as aforesaid, that the said alleged improvements in the machine for reaping all kinds of small grain, mentioned and described in the letters patent, first in said declaration described and set forth, and especially the parts thereof above particularly described as invented by the Rev. Patrick Bell, had been described in a public work, called "Louden's Encyclopædia of Agriculture, Second Edition," published at London, in the Kingdom of Great Britain, in the year 1831, and prior to the invention thereof by the plaintiff.

[99] And these defendants will also insist and give in evidence as aforesaid, that the said alleged improvements in the machine for reaping small grain, mentioned and described in the letters patent first set forth in said complaint, and therein claimed as new, or the most substantial and material parts thereof, viz.: the methods of cutting by means of a vibrating blade operated by a crank, with the other aids and means of cutting described in said letters patent, and the mode of changing the machine for cutting either high or low, as described in said letters patent, and also the [100] method of dividing and keeping separate the grain to be cut, from that to be left standing, described in said letters patent, were invented and put in use by William Obed Hussey, then of Cincinnati in the State of Ohio, and now of Baltimore in the State of Maryland, at and in the neighborhood of Cincinnati aforesaid, and also put in use in the State of Maryland prior to the invention thereof by the plaintiff.

And these defendants will also insist and give in evidence as afore-

said, that the said Cyrus H. McCormick was not the original and first inventor or discoverer of the alleged improvements in the reaping
[101] machines mentioned and described in the letters patent, secondly in said declarations above set forth and therein claimed as new, but that the same or the most substantial and material parts thereof, to wit: the reversed angle of the teeth of the blade, as described in said letters patent, was invented and put in use by Hiram Moore, of Kalamazoo in the State of Michigan, and put in use by him in the County of Monroe, and State of New York, and also in the County of Kalamazoo in the State of Michigan, prior to the invention thereof by the plaintiff.

[102] And that blades of the description mentioned in said letters patent, were manufactured by William A. Langworthy, then and now of the City of Rochester, in said County of Monroe, and by Junius Judson, then of the City of Rochester, aforesaid, and now of the City of Utica, in the State of New York, and put in use in said County of Monroe, prior to the invention thereof by the plaintiff.

And that the combination of the bow L and dividing irons M, was
[103] invented and put in use by the said Hiram Moore, at the places above-mentioned, and by Obed Hussey, aforenamed, at and near Cincinnati in the State of Ohio, and also in the State of Maryland, prior to the invention thereof by the plaintiff, and that the alleged improvements mentioned in the fourth and fifth claims of the said last-mentioned letters patent, are not different or distinct in principle from the corresponding parts of the machine described in the first-mentioned letters patent, and used in the machine constructed by the plaintiff under those letters patent.

[104] And these defendants will also insist, and give in evidence as aforesaid, that the said plaintiff was not the original and first inventor of the alleged improvements in reaping machines in the letters patent, lastly in said declaration set forth and described, but that the same or the most substantial and material parts thereof, viz., the arrangement of the seat of the raker as described in said last-mentioned letters patent, was invented and put in use by Obed Hussey, above named, at or near Cincinnati, in the State of Ohio, and also in the State of Maryland, prior to the invention thereof by the plaintiff.

[105] And these defendants will also give in evidence, and insist as aforesaid, that the alleged inventions and improvements described in the said last-mentioned letters patent, had been in public use and on sale in the United States, with the consent and allowance of the plaintiff, before his application for a patent for said alleged inventions and improvements.

And these defendants will also prove and give in evidence, and insist as aforesaid, that the said last-mentioned alleged inventions and improvements had been in public use and on sale, with the con-

sent and allowance of the plaintiff, for more than two years prior to his application for a patent.

[106] And they will also prove and give in evidence, and insist as aforesaid, that the plaintiff, before his application for a patent therefor, abandoned his said last-mentioned alleged inventions and improvements to the public.

Dated September 12th, 1850.

Second Notice of Special Matter.

In addition to the facts mentioned in the notice served with the plea in this cause, I intend to prove on the trial thereof, that Hiram Moore, of Kalamazoo, in the State of Michigan, made the invention and improvement claimed by the plaintiff in the 4th claim of his

[107] patent of January, 1845, mentioned in the declaration in this cause, and that said Hiram Moore put such invention in use at Kalamazoo and other places, prior to the invention thereof by the plaintiff.

Dated May 15, 1851.

Third Notice of Special Matter.

Please take notice, that in addition to the facts mentioned in the notices heretofore served on you in this cause, the defendant will prove on the trial thereof, that William F. Ketchum, of Buffalo, in the County of Erie, and State of New York, made and applied to use,

[108] the improvements and inventions claimed by the plaintiff in his letters patent, bearing date January 31, 1845, prior to the invention thereof by the plaintiff, and that the said Ketchum put such inventions and improvements in use in the City of Buffalo, in the said County of Erie, and in other places in the said County of Erie, near to said City, prior to the invention thereof by the plaintiff, and that such invention and the use thereof by the said Ketchum, was known to, and the same was used by Elias P. Needham, at the places above

[109] mentioned, prior to the invention thereof by the plaintiff, the said Needham then being a resident of the said City of Buffalo, and now a resident of the City of New York, in the State of New York, and more particularly, the defendants will prove that the said Ketchum invented and used at the places above mentioned, and the said Ketchum and Needham had knowledge of the inventions and improvements mentioned in the fourth and fifth claims of the said patent of January 31, 1845, prior to the invention thereof by the plaintiff.

[110] These defendants will also prove on said trial, that the said plaintiff was not the original and first inventor or discoverer of the alleged improvements in reaping machines mentioned

and described in the letters patent, bearing date January 31, 1845, set forth in the declaration in this cause, and that the same were invented and applied to use by the Rev. Patrick Bell, of Scotland, in the Kingdom of Great Britain, and used by him in Farfarshire in Scotland, prior to the invention thereof by the plaintiff. And par-
[111] ticularly, that the inventions and improvements mentioned in the fourth and fifth claims of the said last-mentioned letters patent, were so invented and put in use by the said Patrick Bell of Farfarshire aforesaid, prior to the invention thereof by the plaintiff.

These defendants will also prove, that the said alleged improvements mentioned and described in the said above mentioned letters patent, had been described in a printed publication called "Loudon's Encyclopedia of Agriculture," second edition, published at London, in the Kingdom of Great Britain, in the year 1831, at pages 422 to
[112] 429, inclusive, and again described in a third edition of the same work, afterwards published at London aforesaid, and all prior to the invention thereof by the plaintiff. And particularly, that the alleged improvements fourthly and fifthly described and claimed in said letters patent, were described in the said printed publications.

These defendants will also prove, that the alleged improvements mentioned and described in the said letters patent, of the 31st day of January, 1845, and also the alleged improvements mentioned and described in the letters patent, bearing date October 23, 1847, set
[113] forth in the declaration in this cause, were not originally or first invented by the plaintiff, but on the contrary, the said alleged improvements were all invented and applied to use by William and Thomas Schnebley, at Hagerstown, in the State of Maryland, and used by the said William and Thomas Schnebley, at Hagerstown aforesaid, and at other places near to and adjoining Hagerstown aforesaid, and at other places in the State of Maryland aforesaid, prior to the invention or discovery thereof by the plaintiff. That the said William and Thomas Schnebley, in the year 1833, when the said inventions and
[114] improvements were first made and used by them, and afterwards at Hagerstown aforesaid, and now reside at the City of Brooklyn, in the State of New York.

Also, that all the said last-mentioned alleged improvements were invented and applied to use by Obed Hussey, then of Cincinnati, in the State of Ohio, at Cincinnati aforesaid, and at the town of Springfield, in the County of Hamilton, in the State of Ohio, and at other places in said County of Hamilton, near to said City of Cincinnati, prior to the invention thereof by the plaintiff, and that the said Obed
[115] Hussey afterwards used the said alleged improvements at Hagerstown, in the State of Maryland, and at other places near Hagerstown aforesaid, and at Baltimore, and places near to Baltimore, in the said State of Maryland, and at other places in the

said State, and on the borders of the James River, in the State of Virginia, in the presence of the plaintiff, and at divers places in the States of Indiana and Illinois, and also in the City of New York, prior to the invention thereof by the plaintiff, and that the said Obed Hussey resides at the City of Baltimore aforesaid.

[116] That the said alleged improvements were all known to Edward Watkins, now of Hagerstown aforesaid, and were used by him and others at or near that place prior to the invention thereof by the plaintiff.

That the said alleged improvements were all known to Thomas R. Hussey, now of the City of Auburn, in the State of New York, and were used by him and others at or near that place, and at other places in the western part of the State of New York, prior to the invention thereof by the plaintiff.

That the said alleged improvements were all known to Augustus C. Brown, Thomas F. Zorick, John Magness, William J. Lewis, Ed-

[117] ward R. Miller, and others, who all reside at Cincinnati, in the State of Ohio, and were used by them and others at Cincinnati aforesaid, and at other places near Cincinnati, in the County of Hamilton, prior to the invention thereof by the plaintiff.

And that the arrangement of the seat of the raker, as described in the letters patent of October 23d, 1847, set forth in the declaration

[118] in this cause, was invented and used by the said Thomas F. Zorick and John Magness, at their shop in Cincinnati aforesaid, and at other places in and near Cincinnati, prior to the invention thereof by the plaintiff; all of which was well known to the plaintiff.

Dated September 15, 1851.

Fourth Notice of Special Matter.

Please take notice, that, on the trial of this cause, whenever the same shall be again brought to trial, the defendants will prove, in their defence, that the plaintiff was not the original and first inventor of the improvements in reaping machines, patented by him in his

[119] patents, dated January 31st, 1845, and October 23d, 1847, mentioned in his declaration, or of either of said improvements; but that, on the contrary, the said improvements, each and all of them, were invented and applied to use by Abraham Randall, of Vernon or Oneida Castle, Oneida County, New York, at the County of Oneida, in the years 1833 and 1834, and were used by him at that place during the harvests of several succeeding years.

That the same improvements were also invented and applied to use by Frederick Woodward, of Freehold, Monmouth County, New

[120] Jersey, now of Sacramento, California, and were used by him at Freehold and other places in Monmouth County, and also in Burlington County, New Jersey, during the harvests of 1844,

1845, and 1846, and near Shelbyville, in the State of Illinois, in the harvest of the year 1846. The same improvements were also exhibited by said Woodward at the Fair of the American Institute, in the City of New York, in October and November, 1845, and were there examined by said McCormick during such exhibition.

[121] That the improvements claimed by said plaintiff in his said patent of January 31st, 1845, and of October 23d, 1847, were invented and applied to use by Jonathan Read, now of Williamsburgh, in the County of Kings, in the State of New York, in the year 1842, and the same were used in the harvest of that year at Washington, in the District of Columbia, and in the harvest of each year since, and in the neighborhood of Alton, in the State of

[122] Illinois; and such invention and use were also known to Henry F. Reed, now of Williamsburgh aforesaid, and to William T. B. Reed, of Alton aforesaid.

That the said improvements, claimed by the said plaintiff in his patents above-mentioned, were also invented and used by Harvey H. May, now of Galesburg, Illinois, and formerly of Union Village, Washington County, New York. That the same were used by him in 1824, 1825, 1826, and 1827, at and near Union Village aforesaid, during the harvest season of these years.

[123] That the improvement last claimed in the patent of October 23d, 1847, was invented and described and pointed out to said McCormick, at the time of the exhibition by him of his reaper at Rochester, New York, on or about the 17th of July, 1844, by Lyman B. Langworthy, then of Rochester, now of Greene, in the County of Monroe, and State of New York, and George W. Beardsley, then of Rochester aforesaid, and now of Albany, in said state, and Daniel Burroughs, then of Rockport, Monroe County, and now of Buffalo, in the County of Erie, in said state.

[124] Dated September 8, 1854.

And the issue joined is ordered, by the said Court, to be tried at the term of this Court, appointed to be held at the City of Albany, on the third Tuesday of October, in the year 1854, at which day and place last aforesaid, come the parties aforesaid, by their attorneys aforesaid, before the Judges of the said Court, and the Jurors of the Jury, summoned to try the said issue, being called, also came; who, to speak the truth of the matters aforesaid, being chosen, tried, and

[125] sworn, say, upon their oath, that the said defendants are guilty of the premises above laid to their charge, in manner and form as the said plaintiff hath above complained against them, and they assess the damages of the said plaintiff, by reason of the premises, over and above his costs and charges by him, about his suit in this behalf, expended, to seven thousand seven hundred and fifty dollars ($7,750), and for these costs and charges to six cents (06).

Therefore it is considered that the said plaintiff do recover against
[126] the said defendants his said damages, costs, and charges, by the jurors aforesaid, in form aforesaid, assessed; and also two thousand five hundred and ninety-eight dollars, twenty-four cents ($2,598 24), for his said costs and charges, by the said Court now here adjudged, of increase to the said plaintiff, and with his assent; which said damages, costs, and charges, in the whole,
[127] amount to ten thousand three hundred and forty-eight dollars, thirty cents, and the said defendants in mercy, &c.

Judgment signed this 15th day of June, 1855.
Judgment record for $10,348 30.

A. A. BOYCE,
Clerk.

Filed June 15, 1855.

In the Circuit Court of the United States, for the Northern District of New York.

WILLIAM H. SEYMOUR and
DAYTON S. MORGAN,
ads.
CYRUS H. McCORMICK.

Be it remembered, that afterwards to wit, on the eighteenth day of October, in the year one thousand eight hundred and fifty-four, at a term of the Circuit Court of the United States for the Northern
[128] District of New York, then held at the City Hall, in the City of Albany, in the said Northern District, before the Honorable Samuel Nelson, one of the Justices of the Supreme Court of the United States, and the Honorable Nathan K. Hall, District Judge of the said Northern District of New York; the issues joined in this cause, came on to be tried before the said Court, and a jury then and there duly empanelled and sworn to try the said issues.

And the counsel for the plaintiff, to maintain and prove the said
[129] issues on his part, produced and read in evidence a duly certified copy from the United States Patent Office of letters patent, issued to the plaintiff by the United States, on the 31st of January, 1845, for a new and useful improvement in reaping machines, and of the schedule and drawings annexed to the same, of which letters patent and schedule, a copy is hereto annexed, marked A.

The plaintiff's counsel also read in evidence, an account of the manufacture and sale of three hundred reaping machines by the de-
[130] fendants, dated August 20th, 1850, and the affidavit of the defendant Morgan, thereto annexed, made August 21st, 1850, which account and affidavit were on file in the office of the Clerk of the Court, a copy of which account and affidavit is hereto annexed, marked D.

It was admitted that this suit was commenced on the 24th day of August, 1850.

D. Model No. 1.

It was also admitted, that the 300 machines mentioned in the account, marked D, were substantially like a model produced in Court, and put in evidence and marked No. 1. That model and
[131] all other models, which appear by this bill of exceptions, to have been produced and put in evidence on said trial, and all books, documents, papers, and drawings, which appear by this bill of exceptions, to have been produced and put in evidence on said trial, are to be regarded as being annexed to, and forming a part of this bill of exceptions, and are to be produced on any argument thereupon, on writ of error or otherwise.

Harvey Waters was then sworn as a witness for the plaintiff, and testified as follows:

[132] I was bred a machinist; I commenced the trade in early life, and have followed that business up to this time as apprentice, journeyman, and, for a number of years, as master.

For the last 8 years, I have been considerably in the habit of examining machinery and inventions, and patents for inventions, with a view to finding out the essence of their novelties, looking to their mode of operation rather than to their general appearance, with a practical view to what they were made to accomplish. I have made inventions, 1st, with regard to the operation of making toilet pins; 2d,
[133] for the manufacture of scythes by machinery. I reside in North Bridge, Worcester County, Massachusetts.

Model No. 2.

I have examined the plaintiff's patent of 1845, which has been read in evidence both now and heretofore. The model now produced and marked No. 2, was doubtless intended as a model of the patent of 1845, but is not entirely correct. It shows the features embraced in the patent, except that the bow does not rise high enough in proportion to the other parts of the machine.

[134] The specification of the patent of 1845, is sufficient to enable a mechanic to construct a machine from it.

Question. Will you please to state what, in your opinion, constitutes the principle of the invention described in the patent of 1845, so far as regards the dividing apparatus.

Answer. The difficulty to be overcome in dividing grain in the process of reaping it with a machine is confined to grain, which does not stand upright. Where grain is straight and uniform, and is not interlocked, there is very little difficulty in dividing or cutting it with a machine.

[135] But the difficulty arises when the grain is lodged, tangled and interlocked, as it most frequently is, as far as I have ob-

served, the stalks which have a position at the bottom being often crossed as they rise upward. The purpose of the divider described in the plaintiff's patent of 1845, is to separate the grain, dividing that to be cut from that to be left standing, leaving the latter standing erect so perfect and unbroken, that the machine in its next passage around, shall properly collect and cut it. As a part of that
[136] purpose, and for still another purpose, the reel is used in the machine. On every reaping machine which I have ever seen, and I have seen descriptions of some that were made a hundred years ago, there was a projective wedge or point in front, to pass into the grain, and separate the portion to be cut from that to be left standing. This wedge was usually about the height of the cut, and was made to divide the grain horizontally. In McCormick's machine, as patented in 1834, there was a horizontal divider of uniform breadth
[137] from its bottom to its top. There was also a reel-post standing upright, with its foot a little in front of the line of the cutters, and a vertical piece extending from the point of the divider backward and upward to the reel-post. This was an attempt to divide the grain, and to gather it with the reel. But, in the operation of the machine, the stalks of grain would become tangled upon the divider, and their heads would be carried in the wrong direction instead of being taken by the reel, and carried upon the platform. If the grain stood fair, and the machine moved rapidly, then with
[138] the machine of 1834, the cut grain would tumble backward upon the platform. But the object to be secured in a reaping machine, is to always insure the falling upon the platform of grain, that is interlocked and tangled. And there is another objection to a long divider, such as this old horizontal divider was. A long divider will break down the grain through its swaying from side to side, by reason of the movement of the animals drawing the ma-
[139] chine. A divider should be as short as possible, consistently with answering its purpose. To have it short, and still answer its purpose, it must increase in width as it goes backward, and as it goes backward, it must rise upward. If the division is made by a horizontal divider, which increases in width rapidly, the straws being divided close to the ground, will be broken when they are acted upon by the widest part of the divider. But that difficulty disappears when the division is made by a divider, which rises upwards rapidly as it increases in width. For then the widest part of the
[140] divider instead of acting on the stalks, near their roots, acts upon them so high above their roots, that they are not broken in the process of dividing. Because the straws are elastic, and when acted upon at a distance above their roots, those that are to be uncut will be borne outward, and those that are to be cut, will be borne inward by the action of the divider, without being broken or crippled.

The consequence of breaking or crippling the straws in the process of dividing, is, that they fall to the ground, and the machine on
[141] its next round fails to take them up and present them to the cutters, and thus they are lost, or have to be secured by hand labor. Another part of the same device is the dividing iron. The iron rises until it is near the reel, and the slabs of the reel play within the iron so as to insure the catching by the reel of all the straws that are found within the iron. Collateral to this, was the removal of the reel-post which was before perpendicular, and was in front of the line of cutters. With the post in that position, the pro-
[142] per effect of dividing could not be produced. In the machine as constructed according to the plaintiff's patent of 1845, the reel-post is removed backward, and is curved outward, and is out of the way of the dividing process, and free space is thus left for the grain to pass within the sweep of the reel. If the post is removed further backward, it need not be curved outward, and the result will be equally beneficial. I have no doubt as to the utility of these improvements of the plaintiff, in the divider, and in the arrangement of the reel-post.

[143] The dividing apparatus in the defendants' machine (model No. 1) is, I think, substantially the same with McCormick's.

There is in defendants' machine no dividing iron strictly.

But the defendants' divider rises upwards as it extends backwards and spreads outwards and inwards. The inner side of their divider acts like the dividing iron of the plaintiff, in bringing the grain within the power of the reel. The outer side of their divider is, upon the model, no higher than the inner side, but that is compen-
[144] sated for by the central ridge, and as the grain lies across, that the reel sweeping close to the central ridge is sure to take it.

The arrangement is substantially the same as in the plaintiff's machine, so in regard to the reel-post. Strictly there is no post in the defendant's machine. But there is an arm, and a brace to hold the end of the reel, which are the equivalents of the post, and the open space is secured by substantially the same arrangement as in the plaintiff's machine.

The differences between the plaintiff's and the defendants' machine
[145] in regard to the construction of the dividing apparatus, and the arrangement of the reel-post are merely formal and not substantial. In the defendants' dividing apparatus the inner edge of the plank performs all the functions of the dividing iron in the plaintiff's machine, and the middle piece or central ridge in connection with the outer edge of the plank performs all the functions of the outer bow in the plaintiff's machine. The removal of the post in the defendants' machine backwards and crooking it so that it may support the reel and get to be out of the way of the operation of the

[146] dividing process, I consider to be equivalent to setting the post back and carrying it outward as in the plaintiff's machine.

On cross-examination by the defendant's counsel the witness stated as follows:

There has been a piece cut out of the central ridge of the divider in Model No. 1, since the model was used on the former trial of this cause. So far as that alteration goes the model is not now a correct representation of the defendant's machines. There is nothing in McCormick's machine of the specific description of this central ridge, but the rising of the outer bow in McCormick's machine

[147] as it passes back toward the reel-post, answers the same purpose. The arrangement of the two machines in this respect are equivalent, and effect the division of the grain in substantially the same way. There is nothing in the defendant's divider corresponding with the adjustable feature of the crooked iron in the plaintiff's divider. I do not think that a horizontal wedge point with a central ridge, like that in the defendant's divider, would operate well. The witness being shown a drawing of Bell's machine in Loudon's Encyclopedia of Agriculture says, as a mere manner of

[148] supporting the reel, I see no difference between the method of supporting the reel in this and the defendant's machine, but collateral to the division of the grain, they are not the same.

There is, in Bell's machine no divider and no difficulty to be overcome which requires the removal of the reel-post out of the way. The post does not perform any office of dividing in either the plaintiff's or the defendant's machine. It has the mere negative function of being out of the way of the grain.

The witness being shown a drawing of Woodward's machine, says, "Judging from the drawing, the reel is supported in the same man-

[149] ner as in the defendant's machine, as a mere manner of support, without any reference to a dividing apparatus."

I have been examined before as a witness in this cause.

The plaintiff's counsel then offered to read the deposition of John Voice, taken at Chicago on the 12th of October, 1854, and filed in the office of the clerk of this Court, on the 17th of October, 1854, since the commencement of the present term of this Court, but prior to the commencement of this trial.

[150] The defendant's counsel objected to the reading of the deposition, on the ground that it was not filed prior to the commencement of the Term. The objection was overruled. The defendant's counsel excepted to the decision, and the deposition was read; a copy of which is hereto annexed marked E.

Harvey D. May's deposition taken at Chicago Oct. 12th, 1854, was then read, a copy of which is hereto annexed marked F.

Isaac Preston's deposition, taken at Chicago, October 13th, 1854, was then read, a copy of which is hereto annexed, marked G.

[151] George W. Osborn's deposition, taken at Chicago, October 13th, 1854, was then read, a copy of which is hereto annexed, marked H.

Albert Robert's deposition, taken at Chicago, October 13th, 1854, was then read, a copy of which is hereto annexed, marked I.

Ira Jagger, was then sworn as a witness on behalf of the plaintiff, and testified as follows: I have resided in Albany ten years. My [152] business is building machinery, generally steam engines, &c. I have been called as an expert in patent cases relating to machinery. I have examined the specification and drawings in the patent of the plaintiff produced in this cause, and consider them sufficient to enable a good mechanic to construct the machine. Model No. 2 corresponds with the machine as described in the patent of 1845, except that the outer bow should be more elevated opposite the reel-post. The patent describes it as 2½ feet high at that point. In that patent the divider is claimed as the plaintiff's [153] invention. It is intended to separate the grain to be left standing, from that which is to be cut. The inside iron is to bring the grain that goes inside within the control of the reel, while the outside bow carries outward the grain that is to be left uncut. This appears to have been the most important feature in the Patent of 1845.

If the outer bow and inner dividing iron were horizontal, I think they would tend to break down the grain; but as they rise as they diverge outward and inward, that difficulty is avoided, because the [154] grain is separated farther from its roots, and will thus bend and yield to the pressure without breaking. The bowing out of the standard was to make room for the grain, and prevent any tendency to clog.

In the defendant's machine, represented by Model No. 1, the divider corresponds in object with the divider in plaintiff's patent of 1845. The outer edge with the outside bow, the inner edge with the inside iron.

The defendant's divider effects the same purpose of division as the divider in the plaintiff's patent of 1845.

In the defendant's machine, the reel works in the cavity formed, [155] between the inner edge of the inner divider, and the perpendicular piece, and draws out the grain therefrom.

In the defendant's machine, the inside divider throws the grain inward, and the outside divider throws it outward. I find in the defendant's machine, the same upward inclination of the outer bow and of the inner divider which I find in the plaintiff's.

The outside bow in plaintiff's machine is highest, the other being lower, brings the grain within the scope of the reel. The means of supporting the reel in the patent of 1845, and defendant's machine, [156] I think are substantially the same. The object accomplished in both is the same, to prevent the grain from being caught by the reel-post.

In the defendant's machine, the reel-post is put out of the way of the grain in substantially the same way as in the plaintiff's machine. If the support of the reel in the defendant's machine were by the post at a point vertically above the foot of the post, the grain would tangle about the post.

Cross-examined.—On cross-examination, witness says, it is one of
[157] the features of the patent of 1845, so far as the divider is concerned, that the inner dividing iron is adjustable.

There is nothing in the defendant's machine to correspond with this. The defendant's divider is, in this feature of it, entirely different from that of the plaintiff; one is not, and the other is adjustable. There is no central ridge in plaintiff's divider. But as the plaintiff's outer bow is higher than his inner dividing iron, the action is the same as in the defendant's machine with the central ridge, but whether better or not, I cannot say. I do not think that either
[158] machine separates the grain perfectly all the way up to the heads. That machine will separate most perfectly which separates the furthest up towards the heads. The less the lateral width of the divider, the less the danger of breaking the straws.

On being again examined by the plaintiff's counsel, the witness testified as follows: if the grain leans outward, the plaintiff's machine with its outer bow will separate it nearer to the heads of the grain, than the defendant's machine with its central ridge.

A machine with its inner dividing iron adjustable as it is in the plaintiff's, is the best.

[159] On being shown a drawing of Bell's machine, in Loudon's Encyclopedia of Agriculture, witness says: I see no divider in Bell's machine, to separate the cut from the standing grain. Where there is no combined action of a separator with a reel to draw the cut grain upon the platform, the open space produced by the arrangement of the reel standard in plaintiff's machine is not essential. In Bell's machine, the grain is drawn off by an endless apron, and no mode of separating is shown in the drawing of Bell's machine, other than the tendency which the apron in its action has to sepa-
[160] rate. In Bell's machine, the supporting frame is entirely behind the cutters, and the horses are behind, and push the machine.

Joseph Van Tine, on behalf of the plaintiff, testified as follows: I reside at Brockport, New York. Am a mechanic, and since 1845, have been engaged the greater part of the time in making reaping machines; have made the plaintiffs' and defendants' self-rakes; I commenced with Fitch, Barry & Co., of Brockport, who made the plaintiff's machines, and have some practical acquaintance with machines having the plaintiff's divider and raker. I worked on them,
[161] and used them in the field. Never saw the plaintiff's machine at work without the inner dividing iron. That brings the grain within the reach of the reel. The outside bow clears the standing

grain from the machine; operates successfully with tangled grain. A machine without the raker's seat and divider, I should not want at all. It would not find sale among farmers who could obtain machines with the raker's seat and divider. If the divider was horizontal, it would break the grain on both sides.

Model No. 1. I should think substantially the same with plaintiff's machine.

[162] Cross-examined.—I have never used the defendant's machine.

The defendants offer to show by this witness, for the purpose of meeting the opinions of the experts of the importance of the plaintiff's invention, that for several years, since the commencement of this suit, a horizontal divider with a central ridge, such as defendant's would be without the oblique board, has been in successful and practical use, many hundreds of them having been made and sold by Gausan & Co., upon their self-rakes, and by others, and that they operate just as efficiently, and as well as that of the defendant, with

[163] the oblique board, or as that of the plaintiff.

The testimony so offered was objected to by the plaintiff's counsel, on the ground, that the apparatus of the operation of which evidence was so proposed to be given, was different in its construction from that of either the plaintiff or the defendants, and on the further ground, that the evidence offered was to show the operation of such apparatus since, and not before, the commencement of this suit, and the objection was sustained by the Court, and the testimony excluded. To this decision, the defendants' counsel excepted.

[164] Manly C. Sadler, on behalf of plaintiff, testified as follows: I reside at Brockport; manufactured reapers in 1846, in connection with defendants. We constructed McCormick's machines under authority from him. I have some practical acquaintance with the working of the machines.

When first made by us, they did not have the inner dividing iron, but the divider was, in other respects, like that in Model No. 3, of Patent of 1847. They were mainly sent to Western States, and sold.

Some ten were sold about Brockport. As to those sold in this

[165] State, there was a difficulty in dividing tangled grain with them, on account of the absence of the inner dividing iron. The reel would not catch the straws. They were brought back, and the dividing iron was put upon them before the end of the harvest, by the plaintiff's directions. He said that the leaning grain would not otherwise be brought within the action of the reel. After the alteration, the machines gave satisfaction in that respect. I worked them without the inner divider, and when grain was leaning outwards, it would choke so as to stop the machine, or else it would lie so that

[166] you could not get hold of it with the rake. The grain that year in Western New York, was a good deal down and

twisted. I do not think that plaintiff's machine, without the divider, would go into general use in Western New York, where the grain is leaning. It might answer in standing grain. Tangled grain is frequent in Western New York.

I have noticed the operation of the divider, with a view to its value in the machine. I have used the machine with the divider, and have
[167] seen it operate without the divider, with the view of seeing what the value of the divider was in the machines.

Question. What, as the result of your experience with, and observation of the action of the plaintiff's machine, with and without the divider, should you say was the practical difference in value between the plaintiff's machine without the divider, and the same machine with the divider?

Objected to by defendant's counsel as asking for a speculative opinion on a question, as to which the witness could not be regarded as an expert. The Court decided, that if the witness, from working
[168] or witnessing the operation of the machine, could give an opinion, he might do so. To this decision, the defendant's counsel excepted.

Answer. Without the bow and the inner dividing iron, or something that would be equivalent to them, I think the machine would be entirely unsaleable, even with the seat.

Cross-examined.—I have no knowledge as to sales without the improvements. As to that, it is with me merely a matter of opinion.

If, in fact, there were other forms of dividers, that would answer as well as this, or nearly as well, they would be about as valuable.

[169] Levi Cooley, on behalf of the plaintiff, testified as follows: I reside in Brockport; am a mechanic; have made plaintiff's reapers for the defendants. In 1845, they constructed machines for the harvest of 1846, without the inner dividing iron. They were sold on trial, and warranted, and a great share of them were returned. I think about 80 of them. I had the charge of repairing those. I was directed to put on the dividing iron; I also put on the wheel-board, and cut off the reel. The defendants directed me, pursuant
[170] to McCormick's letter, and I made the alterations pursuant to a description in that letter. None of them were returned after these modifications. In the harvest of 1846, I altered a few for the defendants, by putting a block on the divider. I did this by direction of Sadler. The plaintiff's machine of 1845, divides the grain by means of the outside and inside bow. The divider acts so that the reel catches the grain on the inside.

The outside bow presses the standing grain outward, and both the
[171] dividers act to separate the wheat so as to clear it from the wheel, and thus prevent it from being beaten down.

Caleb B. Corser, on behalf of the plaintiff, testified as follows: I reside in Monroe County; am a farmer, and usually raise from 40

to 70 acres of wheat a year. In 1849 or '50, I bought one of McCormick's reaping machines, and have used it since, and have observed the action of the divider. I still continue to use it; I never saw it used without the inner dividing iron. Plaintiff's divider ope-
[172] rates well in all kinds of grain, whether lodged or not. Wheat straw is found in almost every conceivable condition: sometimes coiled, and sometimes thrown in both directions by overgrowth, and storms, and insects. The object of the divider, is to take the grain in every condition, and bring it safely and surely to the reel, so that it may reach the cutters, and be laid upon the platform.

Grain must be divided in advance of the cutting edge of the sickle, and below the interlocking points of the straws. In consequence of the action of the Hessian Fly, the grain generally falls in all direc-
[173] tions, and then there must be something to separate it below the interlocking.

There must be a sharp point to enter between the straws, and as the division is made, the divider must rise and separate upward. A board set edgewise would not divide high enough, or separate wide enough to effect the separation; but the plaintiff's machine effects the separation with wheat in the state I have described.

Benjamin Bower, in behalf of plaintiff, testified as follows: I reside at Ogden, in Monroe County. I do not grow much grain. Have used a reaping machine of the plaintiff's five years. It was made
[174] by Gansan & Co. It was in the form of Model No. 3, plaintiff's patent of 1847. I have tried it without the inner dividing iron, which broke off several times. It would not work without that iron. The straw would not come within the reach of the reel, but would collect, and would clog the machine. I have tried it with the reel-post in front. It operated well in standing, but not in lodged grain.

Question. What is the comparative value of a machine with and without the seat and divider?

[175] Objected to by defendant's counsel, and objection overruled by the Court, to which ruling the defendant's counsel excepted.

Answer. I do not think a machine without the raker's seat and divider, would be saleable at all.

Question. What would you give for a machine without the seat and divider, if you could get one for a fair price with a seat and divider?

An objection to this question was overruled by the Court, and the defendant's counsel excepted.

Answer. I would not give anything for it, because it would be of no use to me.

[176] Cross-examined. I have had nothing to do with using any of McCormick's machines, except this one. I have

acted as agent for the sale of McCormick's machines in 1851, but I have never been an agent for the plaintiff. I never saw him, till here in Court now.

James E. Chapman, in behalf of plaintiff, testified as follows: I reside in Castile, Wyoming County, New York. I have a small farm, and raise some grain; and have used reaping machines. Three years ago last July, I obtained from Mr. Paterson, of Rochester, an agency
[177] to sell the plaintiff's reapers. I had then seen none at work. I obtained a machine; sat it up, and was at work in lodged grain, when the inner dividing iron broke off, and I could not make the machine work well without it. It would work tolerably in lodged grain, without the dividing iron, but not near as well as in standing grain.

Question. Do you think machines without the divider and raker's seat would be saleable?

An objection to this question was overruled by the Court, and the defendant's counsel excepted.

Answer. No.

Cross-examined. Paterson, in employing me, assumed to act for
[178] McCormick. He is in attendance here now. I used the machine without the divider but very little. The dividing iron was adjustable; I broke it in bending it; am still acting as agent for the sale of the machines.

Samuel F. Herschey, sworn on behalf of plaintiff, testified as follows: I reside in the town of Seneca, Ontario County, and am a farmer. I have used one of plaintiff's machines 5 or 6 years. Have cut with it wheat, barley, and oats, from 40 to 60 acres yearly—
[179] sometimes more; one year 200 acres. It had the divider and a seat for the raker. At one time the inner dividing iron broke off, and I tried the machine halfway across the field without it.

The machine without the inner dividing iron failed, and would not separate. It shoved the grain ahead. The grain was lodged, and it became clogged. I had no difficulty with it when the divider was complete. I think it does better work than a man could do by cradling. If I could get a machine at the market price, with a
[180] divider and a raker's seat, I would not give anything for one without them. It would be worse than nothing to me if I was obliged to use it.

On cross-examination, the witness stated that he had no experience with any machine except his own.

That he had acted as agent for the plaintiff, in the sale of the machines, and was employed as such by Paterson.

William McKenzie, sworn on behalf of the plaintiff, testified as

follows: I reside in Livingstone County; am a farmer, and use one of the plaintiff's reapers. It has been used, though not by me, since
[181] 1846. It is like plaintiff's patent of 1847, as shown in Model No. 3. The divider works well in tangled grain. I think it was not on the first year I used the machine, but was put on afterwards. I would give nothing for the machine without the divider.

On cross-examination, the witness says, I have never seen any but plaintiff's machine in use. We cut 80 acres the first years, 150 acres one year since, and the other years 30 or 40 acres.

Aaron Miller, sworn on behalf of the plaintiff, testified as follows:
[182] I reside at Le Roy, Genesee County. I formerly resided at Brockport, from the spring of 1846, to the fall of 1853. I worked for the defendants first in the spring of 1846, and then again in 1848 and '9, and some in 1850. In 1846 or 1847, I repaired some machines at Ganson's, which had been returned.

We put on at that time the divider-iron and wheel-board, and
[183] shortened the reel. The machines were built by Ganson, under the plaintiff, according to the plaintiff's patents. The repairs were made by McCormick's directions. About 60 or 70 were so repaired. In 1846, 1848, and 1849, the defendants were making the plaintiff's machines under authority from plaintiff. I worked for them the fall of 1848, after harvest, and until September, 1849; then I was away six months, and at the expiration of that time worked for them again.

Louis D. V. Wilder's deposition, taken at Rochester, October 15th,
[184] 1851, was then read, a copy of which is hereto annexed, marked J.

William H. Beach's deposition, taken at Rochester, October 15th, 1851, was then read, a copy of which is hereto annexed, marked K.

The plaintiff's counsel then offered to read the advertisement referred to in and annexed to said deposition, and marked A, which was objected to by defendant's counsel, on the ground that the original manuscript, of which that advertisement was said to be a copy, was not produced, or its absence in any way accounted for. The
[185] Court overruled the objection. The defendant's counsel excepted to the ruling, and the advertisement was read.

It was then proved that in January, 1850, the defendants caused to be published in the Genesee Farmer, an agricultural paper, published at Rochester, an advertisement, of which a copy is hereto annexed, marked L.

Albert P. Dickey's deposition, taken at Chicago, October 9th, 1850, except the interrogatories and answers from the 5th to the 8th both inclusive, and except the first clause of the answer to the 9th interrogatory, commencing with the word "I," and ending with the

[186] words "this year;" and except the 1st and 2d cross interrogatories, and the answers thereto, was then read, a copy of which is hereto annexed, marked M.

Aaron Miller, recalled on the part of the plaintiff, testified as follows: I know Stephen G. Williams; I knew him in Brockport; I have seen him there with defendant Seymour; I have heard the defendant, Seymour, say that Williams was his agent. It was in December, 1850, that I heard Seymour say so; he then said he wanted a machine sent to Williams. I first became acquainted with [187] Williams in 1845; I saw Williams at the defendant's office and shop in Brockport, in the fore part of 1850, about the time that I understood the plaintiff had commenced a suit against the defendants; I cannot say that I heard the defendants speak of Williams as their agent before December, 1850; when I made an affidavit in their suit with McCormick, Williams was present, with a good many other gentlemen.

Levi Cooley sworn, on behalf of the plaintiff, testified as follows: [188] I do not know that I ever heard the defendants speak of Williams as their agent; I have seen him once or twice a year at their office, every season since 1847; I don't know whether he was selling machines or taking them to sell; I have no distinct recollection of any conversation between him and the defendants.

Manly C. Sadler, recalled, on behalf of the plaintiff, testified as follows: I cannot be positive as to time or place, or with whom, but I think it was with the defendant, Seymour, that I had a conversation, and heard him state the terms on which Stephen G. Williams [189] sold the defendant's machines for them. I think the conversation was held at defendant's furnace at Brockport. The fact I recollect is, Seymour having stated in that conversation the terms on which Williams was to sell or was selling the machines. I think it was in 1848 or 1849, that this conversation occurred. It was before 1850, before the commencement of this suit; my recollection is that Williams was to have a portion of the price; each [190] machine sold for, over and above the manufacturer's price. This he was to have for getting orders and delivering machines. I have frequently since 1848 seen Williams at the defendant's office in Brockport. I think I have seen the defendant's machines forwarded to his address by them.

The plaintiff's counsel then offered to read the 5th and 7th interrogatories, and the answer to the 5th and so much of the answer to the 7th as states the publication of the Exhibits A & B, in the deposition of Albert P. Dickey, before referred to, the reading of which was objected to by the defendant's counsel, on the ground that it [191] was not proved that Williams was the agent of the defendants, at the time when the acts referred to were done, or that

such acts, if he was their agent, were within the scope of his agency.

The Court overruled the objection, the defendant's counsel excepted to the ruling, and the interrogatories and answers, as far as offered, were read. The 6th interrogatory and answer were suppressed.

The plaintiff's counsel then offered to read the advertisement annexed to said deposition and referred to therein, the reading of which was objected to by the defendant's counsel, on the ground
[192] that there was no proof that Williams or the defendants published or authorized the publication of the said advertisement, or that Williams was the defendant's agent at the time of such publication, or if their agent for any purpose, that he was authorized to make any publication of any kind in their name, or on their account. The Court overruled the objection, the defendant's counsel excepted to the ruling, and the advertisement was read.

Levi Alden's deposition, taken October 16th, 1850, was then read, a copy of which is hereto annexed, marked N.

[193] Harvey A. Blakesley's deposition, taken at Chicago, September 26, 1850, was then read, a copy of which is hereto annexed, marked O.

The defendant's counsel, before the said deposition was read, objected to the reading of those parts of it which related to the profits made by the plaintiff as the manufacturer of such machines, on the ground that there was no allegation of special damages in the declaration, and that the Supreme Court had decided in this case that the manufacturer's profits were not a proper item of damages in such case.

[194] The Court overruled the objection, the defendant's counsel excepted to the ruling, and the whole deposition was read.

Orloff M. Dorman's deposition, taken at Chicago, September 27th, 1850, was then read, a copy of which is hereto annexed, marked P.

William S. McCormick's deposition, taken at Chicago, October 12th, 1854, was then offered, of which the plaintiff's counsel proposed to read a part only at this time, on the ground that only such part was relevant to the opening case of the plaintiff.

The defendants insisted, that, if the plaintiff read any part of such
[195] deposition, he was bound to read the whole, so far as the testimony was taken by him.

The Court decided that the plaintiff's counsel might read at this time such parts of the deposition as they chose to read now, and were not bound to read more at this time, but that the defendants might, at any stage of the cause, read in evidence all parts of the deposition not read by the plaintiff.

The defendant's counsel excepted to the ruling, and the parts so proposed to be read of said deposition were read.

A copy of said deposition is hereto annexed, marked Q.

[196] Thomas J Patterson, sworn in behalf of plaintiff, testified as follows: I have been, and am, general agent of the plaintiff, for the sale of his machines in the State of New York and in the Canadas. I became such general agent in the winter of 1849–1850, before this suit was brought, and am still such. The plaintiff offered to prove by this witness, that, since the witness had been such general agent, the plaintiff had not granted any licenses to construct his machines. This was objected to, on the part of the defendants, [197] on the ground that it was incompetent and immaterial. The Court overruled the objection, and the defendant's counsel excepted to the ruling.

Witness stated.—The plaintiff has not, to my knowledge, granted any licenses for manufacturing his reapers, since I have been his general agent. Within my territory there is no license. My district as agent is New York, part of Western Pennsylvania, and the Canadas. I have no knowledge as to any districts except my own. I do not know of any manufactory where the plaintiff's reapers are made under his authority, or have been made under his authority, [198] since I have been his general agent, except at his own establishment at Chicago.

The plaintiff here rested his case.

The defendant's counsel insisted, that it was incumbent upon the plaintiff to give his original patent of 1834 in evidence, on the ground that without that patent the Court and Jury could not determine, in point of fact, what was new and what was old in the machine described in the patent of 1845, given in evidence, which purported to cover [199] only improvements in the machine described in such original patent, and insisted also, that unless such original patent was produced, the plaintiff's patent of 1845, which had been given in evidence, should be rejected.

The Court decided, that the patent of 1845 was, on its face, sufficient, and that the plaintiff was not bound to introduce his original patent. To this decision, the defendant's counsel excepted.

DEFENCE.

The defendant's counsel then offered in evidence, the drawings and descriptions of the reaping machine said to have been invented by the Reverend Patrick Bell, in Scotland, in the year 1828, as given [200] in Loudon's Encyclopædia of British Agriculture, 2d edition, published in London in 1831, at pages 422 to 427, which description was read, a copy of which is hereto annexed, marked No. 3.

William Schnebley's deposition, taken at New York, October 11th, 1854, was then read, on the part of the defendants, a copy of which is here annexed, marked No. 4.

The defendant's counsel then read in evidence, letters patent from

the government of the United States to William and Thomas Schne-
[201] bley, dated August 22d, 1833, a copy of which is hereto annexed, marked No. 5.

James S. Lawrence was then sworn, on the part of the defendants, and testified as follows: I reside in Monmouth County, New Jersey. Have resided there since my childhood, 56 years. When in business, I was a farmer. A reaping machine was used on my farm by my tenant. I was present during its operation. It operated two years on my farm, 1845 and 1846. I saw the same machine in operation,
[202] in 1843 and 1844. The reel was not on it in 1843, but it was in 1844. Ferdinand Woodward was the inventor. The drawing shown to witness represents the general features of the machine. [The drawing is hereto annexed, marked No. 6.] The grain was discharged at the side of the machine, in gavels suitable for binding, by a raker standing on the platform. There was an arrangement for dividing the cut from the standing grain. There was in front of the machine, on each side, a projection of wood, in a
[203] wedge form, used as a divider or separator. On the side next the standing grain, there was a piece of wood, flat, projecting horizontally in front of the cutters, and forming a wedge-shaped point. It was 4½ inches wide in the rear, and terminated at the front in a point. It projected 2 feet 10 inches in front of the cutters. It was movable on the frame, turning to the right or left upon a screw-bolt, and adjustable at the pleasure of the operator. When the grain was heavy, it was turned inward, for the purpose of
[204] reducing the quantity of grain brought against the cutters. It was held firmly in its position by a screw-bolt, and when adjusted, it was a fixed projecting divider. There was, in rear of this divider, a board, standing perpendicularly on its edge on the frame of the machine, the front end of which board formed a point at the level of the upper side of the frame of the machine, and the board increased in width rising, as it projected back from the cutters to the upright
[205] frame. It was from 2 to 3 feet from the front to the rear end of this board, on the side where the grain was discharged. I think it was longer on the side of the standing grain. At the highest point, it was about 2½ feet high. This board was always in use. There was also in use at times (I did not see it at all times), a rod, extending from 4 to 6 inches back of the point of the separator, until it struck the upper edge of the perpendicular board about the middle of its length. The angle of elevation of the rod was from 30
[206] to 35 degrees. It was near to and outside of the real, and the arms passed below and inside of it. They swept over the inward projection of the divider. I am unable to say, whether the machine is still in use. I think it was in use in my neighborhood from 1843 down to 1851. During that period, I think I saw it in operation every year. It cut the grain as well as any of the

[207] reapers I have ever seen, and deposited it as well. I have seen McCormick's operate several times. Saw it operate at the exhibition at Mount Holly last summer. I saw the Woodward machine and divider used in heavy and light grain. It divided the grain as well as McCormick's. I don't know whether better, or not. If I had seen both operating in the same field, at the same time, I could judge better. I am Vice-President of the Monmouth County Agricultural Society, and have devoted much attention to agricultural implements. Woodward has recently removed to California. I have received letters from him there. I drew the specification on [208] which he obtained his patent. The inventor of this machine (Woodward), and several others, afterwards went around from farm to farm with his machines, several years cutting grain at 50 cents per acre. I know of the manufacture and sale of several of these machines, in different years.

On cross-examination, the witness stated as follows: The specification was not drawn until some time after the machine was in operation. I think not until 1844. I do not remember how long before the patent [209] was issued. After I first saw the machine, a sheaf-box was added on the right of the operator. When the grain fell upon the platform, it was drawn into the sheaf-box, and then, by means of a treddle, the box discharged the grain upon the ground. I cannot say whether the sheaf-box was added in 1844 or 1845. I think it was added after I wrote the specification. I have no memorandum by which I can fix the date of the adding of the sheaf-box, or the date of drafting the specification—nothing but memory. The machine [210] used in 1843 was without a reel. The reel was added in 1844. I think there was no other alteration. The rod may not have been added until 1844, or after. The rod came up in a straight line. The front edge of the perpendicular board started from about the line of the cutters. 'I subscribed the specification, as a witness, with my wife, Phebe Ann Lawrence. I drew the specifications, under Woodward's direction. What he intended, as to making the specification a full description of the machine, I cannot say. I cannot say [211] why the reel was omitted in the description. I cannot state what I intended in drawing the specification.' I acted under Woodward's direction. What he intended, I don't know. The reel improved the operation of the machine. When the grain was inclined toward the machine, the machine would work as well without a reel as with one, but it would not work as well without a reel in tangled grain. It is as important to have a machine work in tangled grain as in erect grain. The inner line of the horizontal board forming [212] the divider, projected within the inner surface of the upright board two inches at the widest part. I have recently examined the machine. I cannot say when I first saw this very machine. I presume I first saw it in 1843. I will not say, that the divider I measured the other day, was the same divider I saw in 1843, but it

was the same kind of divider that I saw in 1844. The measurements were not materially different from the machine I saw in 1843
[213] and 1844. I have memoranda of other things that happened at the time, but none as to these machines, and I supply from my memory the link as to the dates I have given. A place was cut in the platform for the sheaf-box, and a place for the treddle. The vertical board on the right side, did not extend as far back as the vertical board on the left side. I call the discharging side, as the machine progresses into the standing grain, the right side. The operator behind has a wheel to steer the machine, like the helm of a
[214] ship. The machine cut from 7 feet 7 inches to 9 feet in width. It had a shear for each finger, and a series of shears in connection. The forward ends of the cutter were levelled near the point. The raker stood in rear of the platform on which the grain fell, leaning against a bar which separated him from it, over which he bent forward, and raked the grain off to the right. I can't say from memory, whether this was described in the patent, though I think it
[215] was. The platform was changeable, so as to be from 4 or 5 inches to a foot from the ground, as preferred. I have been a practical farmer from 1818 to 1827, and still own land, which is cultivated under my direction. I never personally worked a reaper. I have not known many of Woodward's machines to be used. He made, perhaps, half a dozen. I cannot say that any of these continued in use any length of time. I saw plaintiff's machine in July last, near Mount Holly, work in tangled grain. I observed closely its operation, and that of each of the other machines exhibited there.
[216] The Woodward machine was not exhibited there then. There was no machine exhibited there which had a divider like Woodward's. No machine will perfectly disentangle grain when it is lodged. I have seen grain so much tangled, that no machine would divide it so as not to break it. I never had any interest in Woodward's patent.

Jonathan Reed's patent, dated March 12th, 1842, was then read on the part of the defendants, a copy of which is hereto annexed, marked No. 7.

Jonathan Reed's deposition, taken at New York, October 12th,
[217] 1854, was then read on the part of the defendants, a copy of which is herto annexed, marked No. 8.

Obed Hussey's patent, dated December 31st, 1833, was then read on the part of the defendants, a copy of which is hereto annexed, marked No. 9.

Obed Hussey's deposition, taken at Baltimore, June 11th, 1851, was then read on the part of the defendants, a copy of which is hereto annexed, marked No. 10.

Obed Hussey's deposition, taken at Baltimore, October 13th,

[218] 1854, was then read on the part of the defendants, a copy of which is hereto annexed, marked No. 11.

Hiram Moore's testimony, taken in the trial of this cause at Canandaigua, in June, 1851, was then read by consent from the minutes of the plaintiff's counsel, as follows:

I reside in Michigan, County of Kalamazoo, Town of Charlestown. I am engaged in agriculture, and construction of harvest implements. In the winter of 1835–6, I was at the Patent Office, and examined [219] models. I was in the Patent Office at different times, once with Mr. Selden. (Is shown Hussey's model.) I am acquainted with machines, called Hussey's Machines. I think I have read his specification, but I don't recollect. I think this model represents Hussey's machine substantially.

Cross-examined.—Plaintiff gives in evidence Hussey's patent, dated 31st of December, 1833, for the purpose of cross-examining the witness.

The Hussey Machines are closed at both sides, and are constructed for raking the grain off at the rear.

Re-examined.—A machine constructed like the model, the grain could be raked off at the sides.

I call myself the principal inventor of the machine, called Moore [220] & Haskill's Machine. The first machine put in use, so that I could test the cutting, threshing, and winnowing, was used in the harvest of 1835.

There was a point projecting probably 2 feet forward of the fingers; it diverged both ways, as shown in the model. I will not be positive that in the first machine I raised the vertical line, but I did in 1836. I constructed the guard so as to come within the end [221] of the cutter, so that the guard also operates as a finger for cutting. In defendant's machine, the divider is something like mine; the simple principle is dividing the grain, like a boy going through it, as described by Mr. Watson.

I think one or more of my machines have run more or less every season since 1835. I use a straight sickle, with reversed angles—reversed every six inches. I made this sickle in 1834. I changed to a scalloped edge, I think, in 1839, perhaps a year earlier or later. [222] In the winter of 1836–7, I built two machines resembling this; one in the outline at Rochester, with the sickle with reversed angles; never heard of such an one before. I made my cylinder a perfect cylinder at first. The two that I made at Rochester, one of which was a perfect cylinder, the other an entire different arrangement; I am not positive. I have used such a form of cylinder as is on this model more than seven or eight years; I have seen plaintiff's machines several years; I did not see any before the seat [223] was adopted. It strikes me the idea of putting a seat upon anything drawn by horses, is a commonplace idea; but the

placing a seat where the business is to be performed, is rather a commonplace idea. It strikes me, that a man of good common sense, who is used to raking, would see that the place of plaintiff's seat would be the place where it should be put.

Is shown defendant's model. The contrivance by which the raker is supported, I should not call a seat. The form of this is different from plaintiff's, but the effect produced is the same. The piece in
[224] front, that supports the man, is the same as plaintiff's; but this piece itself in defendants' is supported differently from plaintiff's—one being supported at the ends, and plaintiff's supported in the middle.

My impression is, a man standing free from anything could exercise his body and arms better, than to be confined either outside or inside of his legs.

The reel-post, as described in patent of 1845, is identical in effect with the post as now used by defendants.

Cross-examined.—I call the placing the reel-post back, as now used
[225] in defendants' and plaintiff's machines, a different invention from the curved post described in patent of 1845.

The process of mind in inventing is to determine upon the effect desired to be produced, and then invent the means of producing that effect. The placing the post farther back than represented by patent of 1845, is a different invention. I think the means of supporting a raker by defendants', is a different arrangement from plaintiff's.
[226] One is a seat, and the other a hole. It is a common idea to face an object, and also to turn your back upon the same object.

The substitution of one material for another is not an invention. It was necessary to place the raker's seat in a relative position to the reel and the platform. It would depend upon the previous position of the raker, and what was to be done, whether thus arranging the seat was an invention. The means of separating the grain is the same substantially in plaintiff's and defendants' machines.

The design of my invention, is to cut off the grain just below the
[227] heads. An operator rides on the side of my machine, to elevate or depress the cutter, to suit the different heights of grain; the sole object being to cut off the heads of the grain only.

It was not necessary for me to divide the straw, and bring it within the operations of the cutter, as only the heads were cut. My cylinder, or reel, is not adapted to a mere reaping machine. Grain cut with my machine would not be in a state that it could be bound up.

It takes fourteen horses to work my machine in the field. I have
[228] made only five entirely new machines, and modified two several times. Can cut from 18 to 25 acres a-day with my machine; it is geared to have the right motion when the horses move 2½ miles an hour. The two last machines that I built cost me $700 or $800 apiece. It weighs 2½ tons.

Plaintiff's machine is better with the seat—decidedly better.

Re-examined.—I did not mean to state that attaching a winnowing-machine to a thresher, but it would be a commonplace idea that
[229] the grain should be winnowed. I consider the mode of dividing the grain substantially the same. The dividing-iron I throw out of the question.

William A. Langworthy's deposition, taken at Rochester, October 20th, 1851, was then read on the part of the defendants, a copy of which is hereto annexed, marked No. 12.

Junius Judson's deposition, taken at Rochester, October 20th, 1851, was then read on the part of the defendants, a copy of which is hereto annexed, marked No. 13.

Lyman B. Langworthy, sworn on behalf of the defendants, testified
[230] as follows: I reside in Greece, Monroe County. I am now a farmer; was a mechanic until the latter part of my life; was proprietor of a foundry.

We made agricultural implements, mill-machinery, steam-engines, &c. Ours was, for many years, the only foundry of any extent in Rochester. I have attended most of the State Agricultural Fairs, and have always (except in one instance) been on the committee to examine agricultural implements.

I have known McCormick's reaper since it first came to Monroe County, in 1845. My attention was called to it by a notice in a newspaper at that time. I witnessed its operation, and as chairman
[231] of a committee made a favorable report of it. I have frequently seen the machine in use since. Model No. 2, I should think, is, in its general arrangement, substantially the same as the machine when I first saw it. There is nothing in that to correspond with the central ridge of defendants' divider; I should think, for that reason, the defendants' the best constructed divider. If it
[232] were merely a horizontal wedge at the bottom, 5 or 6 inches wide, with the upright board in the centre, I should deem it preferable to the plaintiff's device and to the defendants'. A rising up of the divider as it goes back, is less likely to break the straw. With a narrow wedge at bottom and a vertical ridge, such as I have described, there is less danger of breaking the grain than with the plaintiff's divider, or with the defendants'.

The machines ordinarily cut the grain from five inches to a foot above the ground.

I have seen Hussey's divider. It operates well, and is extensively
[233] used in Western New York; more so than any other machine. Hussey's machine has no reel.

The reel, I should think, would aid the divider. I have seen machines work frequently with a horizontal wedge divider, with central ridge, as I have described, and have followed them when at work. Hussey's machine and Bunall's machine are machines of that kind.

Cross-examined.—A wide dividing-board acting on grain at a distance from the ground, will separate the heads better than if it
[234] acted on the grain near the ground. A horizontal wedge, 12 inches wide, acting on the straws near the ground, would break them down. The straws are usually an inch or two apart. The point of the divider should enter between the straws, near the ground, in order to divide properly. If the divider enters between the straws near the ground, and gradually spreads out as it rises upward, so that it is widest at its highest elevation, the less will be its tendency to break the straws. The wider the divider at its highest elevation, the quicker the separation. With Hussey's machine the grain is discharged behind, and must be taken up before the machine
[235] comes round again. This is an objection to Hussey's machine. With the plaintiff's machine a whole field can be cut, before any of the grain is bound up. When so discharged, it is just as material that the grain be properly divided, as when it is discharged at the side. There would be some slight tendency to break off the heads of the grain with the reel, if it was not properly divided.

Re-examined. The vertical board in the centre would be much less likely to break the grain than a wide pressure at the same elevation; that would break the straws.

[236] George F. Barnett's deposition, taken at Rochester, October 17th, 1851, was then read on the part of the defendants, a copy of which is here annexed, marked No. 14.

The plaintiff's petition and affidavit, dated January 1st, 1848, asking an extension by the Commissioner of Patents, of the plaintiff's patent of June 21st, 1834, was then read on the part of the defendants, a copy of which is hereto annexed, marked No. 15.

The defendant's counsel then read extracts from the plaintiff's bill
[237] of complaint, filed by him against these defendants, May 18th, 1850, praying for an injunction to restrain the defendants from selling the 300 machines, on account of the sale of which, this suit was brought. In that bill there was no allegation or charge that the said machines embraced the principles of any patent of the plaintiff, except that of October 23d, 1847. The extracts so read, were
[238] from folio 78 to 91 of said bill, both inclusive, and a copy thereof is hereto annexed, marked No. 16.

Hugh Van Alstyne, sworn as a witness on behalf of the defendants, testified as follows: I reside in Columbia County, am a farmer, and have been in the habit of using reaping machines for the last two seasons. I have seen the plantiff's reaper in use; it had a divider like that in Model No. 3; I saw it at the State Trial of Reapers at Geneva, in 1852; I saw it cut the field allotted to it, and so also, with the other reapers; among them, one of the defendant's. The divider in

[239] the defendant's machine was a board nearly perpendicular; it rested on a board, a timber, nearly horizontal, four inches wide, in a wedge form, running to a point 20 inches in front of the cutters; the point was, I think, a little higher than the rear end; the central board was an inch or a little more, in thickness; it stood on its edge running down to a point, at the point of the horizontal board before mentioned; at the back end, it is 18 inches or two feet high;
[240] that divider operated as well as McCormick's; I bought one like it, with a similar divider, for the next harvest, and used it through the harvests of 1853 and 1854; the first year I cut 80 acres with it, and my neighbor cut 30 or 40; some of the wheat which I cut that season did not stand erect, and the machine did its work well; there was no difficulty with the divider; this year I have cut with it about 60 acres, and it operated well. I prefer this form
[241] of divider to McCormick's, and judge from the practical operation of the machines.

Cross-examined. Some of the grain cut at Geneva was lodged and tangled; the trial there was a fair test; each machine cut about two acres; the plaintiff's machine had the best part of the lot; the defendant's machine had a reel; the perpendicular board of the divider was as near the reel as it could be, without hitting; there was no difficulty on that account; the reel gathered the grain well and did not touch the divider; I have had no experience with the plaintiff's
[242] reaper, except what I saw at that trial; my machine has a reel.

Peter A. Van Alstyne, sworn on the part of the defendants, testified as follows: I reside at Stuyvesant, in Columbia County, am a farmer, and have, for the last two years, used reaping machines; mine is the same kind as that described by my brother, last witness, as used by him. I cut in 1853 with my machine, 75 or 80 acres for myself, and in all 125 or 130 acres, including what I cut for my neighbors; in my machine there was a horizontal sill 4 or 5 inches
[243] wide, and a board on its edge, standing on the centre of the sill, and both run to a point in front of the cutters.

The vertical board run back, wedge fashion, till it was two feet high; I used it in an acre of lodged grain, where the grain was so flat that it could not be cradled by hand; it operated perfectly; I always either drove or threw off the grain.

I used the machine at a trial of reapers in Rensellaer County; the grain was good fair rye, mostly straight; we were 28 minutes cutting
[244] an acre, and did it well; I have used it in grain in all conditions, heavy and light, standing and lodged, and there never was any difficulty with the divider.

Cross-examined. I never saw the plaintiff's machine in use; the lodged grain that I cut was so very low, that I had to go against the heads; the machine would pass over it when going in the opposite direction; I know it does not break the heads or waste the grain; I

adjust my reel within one and a-half inches of the vertical board; it
[245] never, when properly adjusted, will strike the board; my grain is cut perfectly clean; in cradling by hand, I had always in my fields two or three loads of rakings left; this machine does not leave enough to be worth raking; my wheat grows from two to six feet high; I have sold my machine, because I want to get a self-raker, to save labor; I have sold machines for the defendants as their agent; my brother has not; he bought his machine from me.

Ansel Chappell, sworn on behalf of defendants, testified as follows:
[246] I reside at Brockport, Monroe County; was a farmer formerly, for 40 years; I have used McCormick's reaper from, I think, the time he first brought it to Monroe County; I bought and wore out the first machine he brought there; I was employed by him first to introduce it; there was no seat; I walked by the side of it to do the raking; it operated well; I cut 100 acres with it the first year; I assisted McCormick in trying a machine at Avon and Mt. Morris, the next year; that had a seat on it; I went afterwards to
[247] Wisconsin and other places, to introduce and put up machines, and have since used all the kinds manufactured at Brockport, down to the present time; there are three reaper establishments at Brockport; the defendant's machines, manufactured for the harvest of 1852, with the raker placed standing on the rear of the platform facing the falling grain, had dividers similar to those described by the two last witnesses; they operated so far as dividing was concerned as well as any that I ever saw, and in all kinds of grain, whether standing erect or lodged and tangled.

[248] Cross-examined. I am not engaged as agent for the defendants; I was six months in business with them in 1844, and I went west for them prior to the present trial, for the purpose of finding a witness, Hiram Moore, but did not find him; I knew Moore personally, before I went; I never had any difficulty with the plaintiff that I know of, though I may have called him a very mean man, and said that he refused to pay his debts.

The defendant here rested.

By plaintiff.

The parts of William S. McCormick's deposition, taken at Chicago,
[249] October 10th, 1854, which were not before read, were then read, a copy of which deposition is hereto annexed, marked Q.

E. L. Brown's deposition, taken at Schoolcraft, Kalamazoo County, Michigan, October 21st, 1851, was then read on the part of the plaintiff, a copy of which is hereto annexed, marked R.

Andrew Y. Moore's deposition, taken on the 21st of October, 1851, at Schoolcraft, in Kalamazoo County, Michigan, was then read on the part of the plaintiff, a copy of which is hereto annexed, marked S.

[250] William S. McCormick's deposition, taken at Chicago, Oct. 18th, 1851, was then read on behalf of the plaintiff, a copy of which is hereto annexed, marked T.

Alfred R. Metcalf was then sworn as a witness on the part of the plaintiff, and identified as present the two exhibits referred to in the deposition last read.

John J. Conover, called on behalf of plaintiff, testifies as follows: I reside in Manalatan township, Monmouth County, New Jersey. I saw Woodward's machine work some little in July, 1845. I did not [251] observe the divider very particularly. The machine did not divide very nice. It dragged the wheat. It was on a farm my son occupied at Middletown. Woodward was with it. I never saw but that one. He cut round a clever piece a few times, so that the neighbors could see it. The wheat was some standing and some leaning. He cut perhaps one or two acres. The wheat was pretty ripe. I do not know of any of the machines in operation now.

James Campbell, called on behalf of plaintiff, testified as follows: [252] I reside in New Jersey. Have been acquainted with plaintiff since Feb'y, 1852. I have had some little experience with Hussey's machine. I bought one once. The man that brought it attempted to put it in use, and after cutting a short distance in heavy grain, it stopped, and we had to cradle it out. McCormick's is decidedly better than Hussey's for tangled grain. We prefer McCormick's in Western New Jersey, Somerset County. We have both Hussey's and the plaintiff's machines there. To effect the separation of heavy tangled grain badly twisted, I think it requires a divider very similar [253] to that in McCormick's machine. In light standing grain almost any separator will do. These things I know from practical experience. There is considerable play at the end of the reel in the plaintiff's machine. I generally give 4½ inches play, and then the reel will frequently strike, arising from the shaking about of the machine. In the plaintiff's machine, I have never known the end of the reel fail to catch the straws. In using a perpendicular divider, if the reel springs, the grain will not be caught by it.

[254] Cross-examined.—I am agent for the sale of McCormick's machines in New Jersey.

Guy Collins, called on behalf of the plaintiff, testified as follows: I am a farmer, and reside in Ontario County, New York. I have used the plaintiff's reaping machine since 1845 or 1846. I have seen Hussey's machine in use. We have them in my neighborhood. I think the McCormick machine divides the best. I have never known the plaintiff's machine to fail in heavy and tangled grain. I think there is so much difference in this respect between the plaintiff's and Hussey's, that there is no comparison between them. In using

[255] Hussey's machine, a man has to work all the time, and then he must lose a good deal of the grain. I have raised as high as three thousand bushels of wheat a year. I think it important to have the reel overlap the dividing iron. The reel springs while the machine is in motion. Burrall's machine has the same divider as Hussey's. The adjustability of the dividing iron of plaintiff is useful. I sometimes move the point right and left, as well as upwards and downwards, depending on the condition of the grain.

[256] John H. Van Ness, called by the plaintiff, testified as follows: I reside in Perinton, Monroe County, New York; am a farmer, and have used the plaintiff's machine. The chief importance of the plaintiff's divider is in cutting tangled grain.

William Marshall, called by the plaintiff, testified as follows: I reside in Rock Island County, Illinois, am a farmer, and have used McCormick's machine since 1848. His divider is very essential in lodged grain. In 1850, I had a piece of wheat which was heavy in spots. I put some cradlers into it, but they found it so difficult to [257] cradle it, that I put the plaintiff's machine into it. That cut it well. We now never use a cradle. Dividing near the ground, and gradually rising upwards, separates the heads completely. It is important that the reel should overlap the dividing iron, in order to insure the gathering of all the grain.

Benjamin P. Johnson, called by plaintiff, testified as follows: I am Secretary of the New York State Agricultural Society. I was commissioner for this State to the World's Fair at London. I was [258] on the jury (the sub-jury of three), for the trial of reapers. McCormick's, Hussey's, and Garrett's reapers were entered. The last was an English copy of Hussey's, but it was not tried. The trial took place at Mechi's farm. We first tried Hussey's. The grain was heavy and green, and the day was wet. The grain was wheat, not ripe. Hussey's machine was in charge of a man from the Crystal Palace. He had no practical experience in the use of the machine. I gave him the best information I could as to its use. After cutting one or two clips, it clogged, and broke down the grain. [259] It was then cutting across the stiches. We then turned it, and put it in lengthwise, and it failed again. We then tried the plaintiff's machine, commencing with it at the spot where Hussey's failed, and it cut its swath admirably. We then returned to try it for the great medal, for the best implement or article which should be in the Exhibition. We were the last sub-jury to try for the great medal. It cut its second swath as well as it did the first. It cut at the rate of 2 acres an hour in that heavy grain. We recommended [260] the plaintiff's reaper for a council medal, and a council medal was awarded to it. The sub-jury consisted of myself, an Englishman, and a Belgian. No council medal was awarded to any

other single implement. The plaintiff's machine divided the grain readily.

P. Cross-examined. — McKenzie, who managed McCormick's reaper, was an experienced workman, who went over from America with the machine. The man who had the charge of Hussey's had probably never seen a reaper before. Hussey's machine has been in very extensive use in this State.

Harvey Waters, recalled for plaintiff, testified as follows: I have
[261] examined the descriptions and drawings of the Bell machine. I find no divider, except one blade of the shears that runs forward. The shears are like large tailors' shears, one blade stationary and one moving. I have no idea that the Bell machine would work in tangled grain.

Woodward's machine, so far as I can judge from the description we have had of it, and from his patent, differs from Bell's in having no apron, and in having a sort of divider, independent of the shears. His divider is substantially different from the plaintiff's, and from the defendant's. It is only a horizontal wedge.

[262] The wedge is four or five inches wide, and adjustable laterally by means of a hinge at the back end of the wedge. It has no upward capacity.

In Read's machine, the divider is broader than in Woodward's machine, but it is horizontal, and does not incline upwards. In Read's machine, the rear end of the divider is about on the same horizontal level with the cutting edges. And this is the case also in Woodward's machine. In both the plaintiff's and defendant's machine, the divider at the point opposite the cutting edge, is considerably above them.

[263] This is very important in the operation of dividing. A divider like Hussey's, namely, a horizontal wedge, with a vertical board in the centre of it, cannot do well in tangled grain, as a machine for use by farmers generally. It is not a practical machine, and a machine, to be of use to the community, must be a practical machine under all circumstances. The inner divider must come up so that the reel shall strike inside of it, or there will be no certainty of catching the grain. In the use of a horizontal divider
[264] with a vertical board, in connection with a reel, the reel will either fail to catch the grain, or else there will be constant danger of its sticking. I have seen Moore's patent, and a model of his machine on two occasions. The divider in his model was very much on the principle of Hussey's. It did not operate on the grain as the plaintiff's divider does. There was no necessity it should, as it only cut off the head of the grain.

I have examined Schnebley's patent. His divider is a horizontal
[265] wedge, which, opposite to the cutters, is on the same level with them. His reel has no action in connection with the wedge.

Cross-examined.—Woodward's divider is adjustable outward or inward. The adjustable feature of the plaintiff's divider is no part of the invention. It is a common device, disclaimed by him, I think, in his patent. At all events, it would not be patentable. My opinion is that a horizontal wedge with a vertical board in its centre is not practical.

Ferdinand Woodward's patent, dated Sept. 30th, 1845, was then read on the part of the plaintiff, a copy of which is hereto annexed, marked U.

[266] Moore and Hascall's Patent, dated June 28th, 1836, was then read on the part of the plaintiff, a copy of which is hereto annexed, marked V.

The Court then charged the jury as follows:

Gentlemen of the Jury:

This case has been so laboriously and thoroughly tried by the learned counsel for the respective parties, that we do not deem it necessary to occupy much more of your time. We are persuaded that you are familiar with every material question involved in the controversy; and we shall content ourselves, in the discharge of our [267] duty, by referring briefly to the questions of fact on which you are to pass, and to the law of the case bearing upon those questions.

The patent, as you will recollect, upon which the action is founded, was issued to the plaintiff on the 31st of January, 1845, for an improvement in reaping machines. The history of the improvements made by the plaintiff in reaping machines, has been developed by the evidence in the progress of the trial. It seems that his experiments [268] began as early as 1830 or 1831, and continued from year to year down to 1834, when he first obtained a patent for his machine. This machine, however, was not a successful one, and but comparatively few were either manufactured or sold. It was found by the farmers who tried them, that they would not work successfully or profitably; and this seems to have been the fate of the experiments made with the machines down to 1845, when a second patent was taken out for improvements upon the first one. And [269] even then, although the machine, as thus improved, was regarded by the farming interest as more valuable than the original one, yet, in consequence of the difficulties in raking the cut grain from the platform, the machine did not go into general or successful operation until after the arrangement of the seat for the raker upon it, which was patented in 1847. Then the machine became eminently successful, and has since gone into very general use. According to the evidence on this trial, only seven machines of the construction as patented in 1834 were sold, down to 1842. Some [270] twenty-nine were sold for the harvest of 1843, the patentee warranting the successful operation of the machine. Some

fifty were sold for the harvest of 1844, and from one hundred to two hundred for the harvest of 1845.

The inventors of improvements upon reaping machines labor under disadvantages and embarrassments that are not common to inventors generally, and this for the reason that experiments and trials of reaping machines can be made only during harvest-time. When the harvest is over, the opportunity for experiment and trial has passed
[271] away, and the inventor is obliged to wait until the succeeding harvest in the next year, to test any improvements that may have been suggested. Not so with other inventors. They can test their improvements or discoveries from day to day continuously, until they have perfected them. This suggestion no doubt accounts for the series of years occupied by the plaintiff in seeking to perfect his improvements on the reaping machine.

The improvements which were patented in 1845, and which are claimed by the plaintiff to have perfected his machine of 1834, so far
[272] as it respects cutting the grain and laying it on the platform, are two, the divider, and the re-arrangement of the reel-post. We hardly need take up your time in going over the details of these two improvements. They have been shown to you upon the models; they have been expounded by the experts in your presence; and they have been illustrated, and more elaborately brought out, by the discussions of the learned counsel at the bar. We have no doubt, therefore, that the whole of them, in detail, are familiar to your minds.

Now, it is said that neither of these improvements, assuming that
[273] the plaintiff was the author of them, is of a description entitling it to be regarded as the subject of a patent under our patent law; in other words, that there is nothing of invention to be found in these improvements, nothing of intellect, or of mind, or of thought, that is new or useful; and that therefore they are not the subject of protection under the law. We desire to call your attention for a few moments to this branch of the case, because the objection just alluded to has been made one of the strong grounds
[274] of objection to the right of the plaintiff to recover, and has been elaborately discussed by the learned counsel for the defendants. This case has, as you have learned, been heretofore before this Court; and we shall, for brevity, refer to the remarks submitted by us to a former jury upon this branch of the case. The patent act of July 4th, 1836 (section 6), provides in substance, that any person having discovered or invented any new or useful art, machine, manufacture, or composition of matter, or any new and
[275] useful improvement on any art, machine, manufacture, or composition of matter, not known or used by others before his discovery or invention, and not, at the time of his application for a patent, in public use or on sale with his consent, may make application to the commissioner of patents, and shall be entitled to a

patent. This is the provision of the law on this subject, and this is the authority conferred on the commissioner for the granting of patents for improvements on machines. You will see, from this provision, what an improvement upon a machine must be, to constitute
[276] it an invention within the meaning of the law. It must be new, not known or in use before; and it must also be useful. In other words, and in perhaps clearer terms, the person claiming the improvement, must have found out himself, and created and constructed, an improvement which had not before been found out or produced by any person, and which is beneficial to the public. There must be novelty in the arrangement of the improved machinery—novelty created by the mind of the person claiming to be the inventor; and, in connection with that species of novelty, there must be
[277] utility. This novelty, worked out by the mind of the inventor, connected with utility, constitutes the essence of a patentable subject under the law.

It is exceedingly difficult to draw a line between what may be regarded by the eye as a small improvement or invention, and one of magnitude. Oftentimes, improvements and discoveries the most important in their consequences, and in their beneficial effects on the business interests of the community, are among the simplest ideas of the mind. Again, you will find improvements of less magnitude in their consequences and in their beneficial effects, indicating a most
[278] laborious and complex exertion of the mind of the inventor. As an illustration of this subject, and one from which you may be enabled to arrive at a proper view of this branch of the case, we refer to an improvement that has been tried in a court of law, and sustained. We allude to the case of Russell *v.* Cowley (Webster's Patent Cases, 464), where it was held to be a patentable improvement to weld iron tubes by means of grooved rollers without a mandrel, such tubes having previously been welded by grooved rollers
[279] upon a mandrel. Now, to the eye, the change in the instance referred to was exceedingly simple. Previously to the improvement, the two edges of the iron cylinder which was to form the tube, were brought together and heated, and then the cylinder was drawn through rollers having a circular aperture smaller than the exterior circumference to be given to the tube, the cylinder being all the while supported on the inside by a mandrel. The edges were thus welded as effectually as by the hammer and anvil, and more accurately. But the mandrel was an embarrass-
[280] ment, because it had to be used in the bore of each tube while it was being drawn through the aperture in the rollers. And the idea occurred to the patentee (Whitehouse) that the edges could be welded as well in the absence of a mandrel as with it. He, therefore, conceived the idea of throwing away the mandrel, and welding the tube without it, and succeeded, thereby getting rid of the trouble of inserting it in welding every tube. This

was held to be a patentable discovery. The getting rid of the mandrel from the bore of the tube in the operation of welding it, was so
[281] useful an idea, that it was held to constitute a patentable subject under the English law, which is no broader than our own statute, and, indeed, scarcely as broad. With these observations, we shall pass from the question whether or not the arrangement by the plaintiff of the improvements in the divider and in the reel-post, and the combination of those improvements with the machine then in existence, constituted them patentable improvements within the meaning of the patent law.

If you should come to the conclusion that these improvements are properly the subject of a patent, then it is said by the learned counsel
[282] for the defendants that there was nothing new in them—that they were before discovered and used, and that the plaintiff has simply appropriated the ideas and skill of others in the arrangement of these improvements, and is, therefore, not entitled to be regarded as their inventor or discoverer. Upon this point of the case, you have been referred to the patent and machine of Schnebley in 1833, to the patent of Hussey, also in 1833, to the patent and
[283] machine of Moore and Hascall in 1836, to the patents and machines of Reed in 1842, and of Woodward in 1845, and to the Bell machine—six machines in all. The patents of all these machines, except Bell's, and the description of that machine, as contained in Loudon's Encyclopedia, have been read in the course of the trial. The position taken by the learned counsel for the defendants is, that these improvements in the divider and in the arrangement of the reel-post, are to be found in some one or all of these several
[284] machines, and that, therefore, there was nothing new in these improvements on the part of the patentee in this case.

There are one or two general observations on this part of the subject which we think it proper to submit to you. With the exception of the patent and machine of Hussey, for aught that appears before us on this trial, not one of the machines referred to ever went into general or successful operation. Why they failed we do not know. What was the secret of their failure we are not informed. What were the defects in their arrangement or construction we are not told.
[285] All we know is that, from the evidence in this case, every one of them turned out, in the end, to be an unsuccessful experiment in the way of the construction of a mechanical reaper. It has been supposed that Bell's machine was an exception. But, upon looking into the evidence bearing upon this machine, we scarcely think it an exception to the other machines that turned out to be failures. Bell, it seems, constructed his machine as early as 1828 or 1829. The last account given of it in Loudon's work, was in
[286] 1829. From that work it appears, that at that time it succeeded in cutting some one or two acres or more of grain. But from 1829 down to 1853, at which latter date the witness Hussey

testifies to its operation, we have no account whatever of this machine. We have no evidence here showing that during that interval the machine was in operation at all; and, in the absence of such proof, it seems to us that no other inference can be drawn, than
[287] that there must have been some defects in the arrangement and construction of that machine. It is true, as testified to by Hussey, that in 1853, on a trial which took place in Scotland or the North of England, between Bell's and Hussey's and McCormick's machines; Bell's proved the most successful in cutting and laying the grain; and, from that testimony, it would seem to have become a practical machine. But this was in the harvest of 1853, two years after the exhibition in the Crystal Palace, where Hussey's and McCormick's machines were exhibited. During the harvest of 1851, those two
[288] machines were repeatedly tried in the neighborhood of the Crystal Palace, and they were again tried in the harvest of 1852. Bell's machine was not on exhibition in the Crystal Palace, for aught that appears. We hear nothing of it there, and it was not a competitor with either Hussey's or McCormick's machine during the harvest of 1851. Nor do we hear of it in 1852 in any trial with the other machines. And it is not till the harvest of 1853
[289] that we hear of the Bell machine coming into competition with the two American machines as a successful reaping machine. In point of fact, therefore, it would seem, for aught that appears from the testimony in this case, that notwithstanding there have been seven attempts, and six of those American, to construct a successful reaping machine, but two out of the seven have ultimately become beneficial and useful instruments for the purposes for which they were constructed—that is, the machine of Hussey, and the machine of McCormick. It appears, from the evidence in the case, that Hussey and McCormick turned their attention to the construction of
[290] a reaping machine very nearly at the same period—McCormick two or three years the earlier. They have persevered from that time down to the present, and they have each of them, it is conceded, brought out a successful reaping machine. All the others failed, failed early, gave up the pursuit, and abandoned their machines.

Between Hussey's and McCormick's machines, there seems to have been no conflict or difference, except as they were competitors for the reputation and profit of bringing out a successful machine. They do not appear to have been rivals as regards any portion of the
[291] arrangement of their respective machines. And, indeed, on comparing them, it will be seen that they are materially different, and in many parts, dependent on different principles and operations for the purpose of producing the one common result.

It is said that, notwithstanding the several machines to which we have referred to turned out to be unsuccessful and were abandoned, yet there existed in some of them the divider and the arrangement of

the reel-post claimed by the plaintiff; and that, admitting that the machines failed as reaping machines, yet, if the arrangements of the
[292] divider and of the reel-post, claimed by the plaintiff, are found to have existed in those machines anterior to the invention of these improvements by the plaintiff, that is sufficient to show that the plaintiff was not the first inventor or discoverer of these improvements. And no doubt the position is well-founded, provided the fact has been established.

Without calling your attention minutely to the identity of arrangement claimed by the defendants to exist, in regard to the two improvements in controversy, between the plaintiff's machine and those prior to his, it is sufficient to state that the horizontal wedge divider, which
[293] several of these machines used, is alleged by the defendants, to embody all the elements and produce all the results to be found in the divider of the plaintiff. Now, it seems to be conceded that the plaintiff himself had, in his machine of 1834, the horizontal wedge divider; but that his machine, like the machines that were brought into existence by the other persons who had turned their attention to the subject, failed in its operation, and, as is claimed by the plaintiff, failed partially, if not wholly, in consequence of the
[294] difficulty in dividing the cut from the uncut grain. The machine would divide the grain when it was standing, without much difficulty; but it would not divide it successfully when tangled, broken down, and lodged; and therefore it failed to cut grain successfully. You will find, on looking at the plaintiff's specification, that this was the difficulty which he was seeking to overcome. He says, "The divider, K, is an extension of the frame on the left side of the platform, say three feet, before the blade, for the purpose, and so constructed as to effect a separation of the wheat to be cut from
[295] that to be left standing, and that *whether tangled or not.*" Again he says, "By means of the bow to bear off the standing wheat, and the iron" (that is, the inside iron) "to throw the wheat to be cut within the powers of the reel, the required separation is made complete," whether the grain is tangled or not. The plaintiff was seeking to obtain a divider that would not only divide the standing grain, but one that could be successfully used for dividing grain, whether standing or tangled, or lodged, or broken. It is for
[296] you to say from the evidence, whether he has been successful, and whether he has constructed an improvement in reaping machines that will not only accomplish reasonably the purpose aimed at, but one that was never before made by any other person. It is for you to say whether it is an answer to the novelty of the plaintiff's arrangement, that the horizontal wedge divider was before in use, and whether that divider contains all the elements, and produces all the effects in its operation, that are contained in
[297] and produced by the divider of the plaintiff. It seems, from the testimony of all the witnesses, that there is no great

difficulty in dividing the grain, in the operation of reaping, where it stands erect. They say that the reel is of no great utility where the grain is not tangled or leaning; that the operation of Hussey's machine without the reel is as successful as that of any other in cutting standing grain; that the difficulty commences in tangled grain; and that, as great portions of the grain during the harvest, portions perhaps of every field, are in that condition, a machine
[298] would be comparatively useless that could operate only on standing grain, leaving that which is tangled to be cut by some other instrument.

These observations are also applicable to the other branch of the case. The reel post in the original machine was, as you will recollect, an upright post, standing in advance of the cutters, and sustaining the reel. The foot of that post was then removed back; but, inasmuch as if the post were to be perpendicular from the new position of its foot, there would be no sufficient support for the reel, the post was bent so as to bring its top very nearly to the same position
[299] it occupied when the post was upright. This arrangement became necessary for the purpose of removing an impediment in the way of the construction of the plaintiff's divider, and it was also necessary in order to avoid the difficulty occasioned by the straw clogging upon the foot of the post.

It has been argued with great confidence, by the learned counsel for the defendants, that this re-arrangement of the reel-post did not require invention, but only the skill of the mechanic; that it did not require learning, or thought, or intellect, in order to bring about this
[300] re-arrangement, and have the reel-post accomplish the object for which it was originally constructed. We have called your attention to what are patentable subjects, and we refer you to the illustration we have already given, to aid you in arriving at the conclusion whether this re-arrangement of the reel-post is or is not a discovery, within the meaning of the patent law. This is a question of fact, for you to determine.

It is then said on the part of the counsel for the defendants, that, assuming the plaintiff to be the inventor of the divider and of the
[301] arrangement of the reel-post, and that they were the subjects of invention so as to entitle the first discoverer of them to a patent, and that the plaintiff is entitled to be protected in the exclusive enjoyment of these improvements, yet he has no right of action against the defendants, on the ground that their divider and their arrangement of the reel-post are substantially different from those of the plaintiff. It will be necessary for you to turn your attention to this question, and to pass upon it. In order to ascertain whether the arrangement of the defendants' divider is substantially
[302] the same with, or substantially different from, the arrangement of the plaintiff's, it will be necessary for you to examine the divider of the defendants, to see whether or not they have

availed themselves of the construction, and operation upon tangled and beaten grain, to be found in that devised by the plaintiff. In other words, you are to see whether the arrangement and practical operation of the defendants' divider, in dividing the cut from the uncut grain, are substantially similar; whether it involves in its con-
[303] struction and operation the same principles and ideas to be found embodied in the divider of the plaintiff.

It is claimed on the part of the plaintiff, that by the peculiar arrangement of his divider it enters the grain near to the ground, and that then, owing to the construction of the outer bow and of the inner iron, the divider, instead of operating like a wedge which is merely horizontal, rises upon the grain as the machine advances, crowding on the outside the uncut grain away from the machine, and untangling the tangled straw, and at the same time turning it
[304] inward, so that it may come within reach of the reel, and within the action of the cutting instrument. This is the beneficial operation claimed for the plaintiff's divider. Now, if the plaintiff has succeeded in satisfying you that this divider is a contrivance of his, and that it produces the useful effect that is claimed, then any arrangement of machinery embracing substantially the same operation in the division of the grain, by entering it near the ground, and then by rising and spreading, untangling and dividing as it rises, is an infringement within the meaning of the patent law. It will be for you to examine the arrangement of the defendants
[305] and the arrangement of the plaintiff, and, with this guide, to determine whether or not the defendants' arrangement embodies the same practical construction and operation in the division of tangled wheat found in the plaintiff's. The same remarks are applicable to the reel-post. We have stated the principles of law which are to govern your investigation; and you will take up the facts, and determine whether the arrangements of the defendants, in both respects, are or are not substantially the same as the plaintiff's. If they are, then the defendants have appropriated the ideas
[306] of the plaintiff. If they are not, then they are independent arrangements, and do not interfere with the plaintiff's.

It is perhaps proper to say in this connection, that the defendants in this case do not belong to the class who had turned their attention to the construction of a successful reaping machine. It seems that their first connection with these machines was in 1845, when they were employed by McCormick to manufacture his reapers in the western part of this State. They were also employed to con-
[307] struct machines for him for the harvest of 1846, and also for the harvest of 1847, containing the improvements in controversy. This seems to have been their first connection either with a reaper or with McCormick's machine. Having been employed to construct his machine containing this divider and this arrangement of the reel-post, they had the best opportunity to learn the princi-

ples on which McCormick had arranged those parts of his machine by means of which he was then about to succeed in making it a useful machine, and one that would go into general use among the farmers
[308] of the country. It is therefore your duty to look well into this branch of the case, and see whether the defendants have done anything more than appropriate the ideas of the plaintiff which they found embodied in those parts of his machine, or whether they have made use of an independent arrangement. If the latter, then they are not infringers. If otherwise, then they are.

This is all that we deem it necessary to say to you on what may be regarded as the merits of this case. There are one or two other points, however, to which it is proper we should briefly call your
[309] attention. One of these turns upon the construction to be given to a claim in the patent. It is said by the learned counsel for the defendants, that there is a claim in the patent, outside of the two claims that are in controversy, which is void, because McCormick appears from the evidence not to have been its original and first inventor; and that, inasmuch as he had made one void claim, his patent is void as it respects all the other claims, although the evidence may show that he was the original and first inventor of
[310] all those other claims. As regards the law applicable to this point, the learned counsel is not strictly correct. The law is this: If a patentee makes a claim which is not well founded, in the same patent with other claims which are well founded, he may disclaim, within a reasonable time, that which he had no right to claim, and then his patent will be good as to the residue—as good as if it had originally issued only for the claims which are valid. If he omits to make a disclaimer, but brings a suit for the violation of his
[311] patent, and it satisfactorily appears upon the trial that he is entitled to be protected in a portion of his claims set up in his patent, but that he is not entitled to be protected in respect to another portion, he is still entitled to damages for the violation of the valid portion of his claims, the same as if all the claims were valid, so far as regards the mere right of recovery; but he gets no costs. That is the law. It has this qualification: If the jury are
[312] satisfied that there has been unreasonable negligence and delay on the part of the patentee in making a disclaimer as respects the invalid part of his patent, then the whole patent is inoperative, and the verdict must be for the defendants. As in this case. The claim on which the question arises is as follows: "I claim the reversed angle of the teeth of the blade, in manner described." It is said by the defendants that the plaintiff was not the first inventor of that arrangement, but that Moore was. Assuming that the position of the learned counsel for the defendants is right, that the
[313] plaintiff was not the first inventor of what is claimed in that claim, if you believe that he was the first inventor of the divider and of the arrangement of the reel-post, he may still be en-

titled to recover damages, unless he has unreasonably neglected and delayed to enter a disclaimer for what is covered by the claim in regard to the reversed angle of the teeth.

The claim in question is founded upon two parts of the patent. As the construction of that claim is a question of law, we shall construe it for your guidance. In the fore-part of the patent, we have a descrip-
[314] tion of the blade and of the blade-case and of the cutter, and of the mode of fastening the blade and the blade-case and the cutter, and of the machinery by which the arrangement is made for the cutter to work. We have also the description of the spear-shaped fingers, and of the mode by which the cutter acts in connection with those fingers. Then, among the claims are these: "2. I claim the reversed angle of the teeth of the blade in manner described. 3. I
[315] claim the arrangement of the construction of the fingers (or teeth for supporting the grain), so as to form the angular spaces in front of the blade, as and for the purpose described." Now, it is insisted on the part of the learned counsel for the defendants, that this second claim is one simply for the reversed angles of the sickle-teeth of the blade. These teeth are common sickle-teeth, with their angles alternately reversed in spaces of an inch and a quarter, more or less. The defendants insist that the second claim
[316] is merely for the reversed teeth on the edge of the cutter, and that the reversing of the teeth of the common sickle as a cutter in a reaping machine was not new with the plaintiff; and that if it was new with him, he had discovered it and used it long before his patent of 1845. The defendants claim that Moore had discovered it as early as 1837 or 1838; and it would also seem that the plaintiff had devised and used it at a very early day after his
[317] patent of 1834—that is, the mere reversing of the teeth. But, on looking into the plaintiff's patent more critically, we are inclined to think that when the plaintiff says, in his second claim, "I claim the reversed angle of the teeth of the blade, *in manner described*," he means to claim the reversing of the angles of the teeth *in the manner previously described in his patent.* You will recollect that it has been shown, in the course of the trial, that in the operation of the machine, the straw comes into the acute-angled spaces on each side of the spear-shaped fingers, and that the angles
[318] of the fingers operate to hold the straws, while the sickle-teeth, being reversed cut in both directions as the blade vibrates. The reversed teeth thus enable the patentee to avail himself of the angles on both sides of the spear-shaped fingers; whereas if the sickle-teeth were not reversed in sections, but all ran in one direction like the teeth of the common sickle, he could use the acute angles upon only one side of the fingers, because the cutter could cut only in one direction. We are, therefore, inclined to think that
[319] the patentee intended to claim by his second claim the cutter having the angles of its teeth reversed in connection with the

angles thus formed by the peculiar shape of the fingers. And, as it is not pretended that any person invented that improvement prior to the plaintiff, the point relied on in this respect by the learned counsel for the defendants fails.

We have now said all that we intend to trouble you with, except a few words on the subject of damages. The case has already been before this Court, and went up from here to the Supreme Court, and
[320] was there reversed upon the point of damages. The Supreme Court held that the principles laid down by this Court upon the former trial to govern the jury in regard to the measure of damages were erroneous, and for that reason granted a new trial. We have, therefore, some light upon this question of damages which we did not possess at the former trial. And we shall on this occasion follow the principles laid down by the Supreme Court for our guidance. As we understand the opinion of the Court, it lays down these principles:
[321] In cases where a patentee avails himself of his invention and of his exclusive right to the enjoyment of its profits, by putting it into market and selling rights under it, as is most usually the case with inventors—that is, rights for States, or counties, or smaller districts, or portions of the invention itself—in such cases, the customary charge for the right to use the patented invention is the measure of the damages which the patentee is entitled to recover in case of an infringement, with interest upon the same from the time of the infringement. In other words, if he is accustomed to sell a
[322] single right for the manufacture of a machine for twenty, thirty, forty, fifty, or one hundred dollars, and if that is his usual price for the right throughout the country, that fee, with the interest from the time of the particular infringement, is the measure of damages for each infringement. But, if the patentee comes to the conclusion not to vend to others his rights under the patent, and not to avail himself of the proceeds of sales of his mere patent-right, but to use the patented invention exclusively himself, and to furnish
[323] the products to the community himself out of his own manufactory or establishment—in such cases a different measure of damages is to be adopted by the jury. And that is this. If the patent is for a machine, an entire machine, the patentee is entitled, as damages in case of infringement, to the profits he could have made in constructing and vending his machine, over and above the mere profits arising out of its manufacture. By that we mean the mere profits of its mechanical construction, and not the profits that grow out of the exclusive right to manufacture the invention under the
[324] patent. The latter belong to the patentee; while the former, the mere mechanical profits, are excluded from the damages. And, if the case is one of an improvement on a machine, then he is entitled, as a measure of damages, to all the advantages of the use of his patented improvement, excluding the profits of the manufacture, and excluding also the value, if any, of the use of the old

machine. Now, so far as respects the benefits and advantages that a patentee would derive from an improvement on a machine, you see at once, that they would depend very much, if not altogether, upon
[325] the usefulness of the machine with that improvement. Hence, you have found in the course of the trial, that witnesses have been introduced for the purpose of ascertaining the relative value of the plaintiff's machine with the improvements in controversy, and of the same machine without those improvements. If the machine, stripped of those improvements, would be a useless article in the market, and if no person would buy it unless those improvements were annexed to it, then its value, so far as its utility
[326] is concerned, depends on those improvements; because they give it vitality and usefulness in the eye of the business community. Hence, it is proper to make this discrimination in canvassing the facts bearing upon the proper measure of damages. We think, therefore, upon the evidence in this case, that if the plaintiff had adopted the policy, which it was his right to do, of being his own manufacturer, and of supplying the country himself with the products of his invention, he is entitled to the measure of damages which we have stated to be applicable to a case of that kind.

[327] It is for you to say what damages the plaintiff has sustained at the hands of the defendants, as respects the three hundred machines complained of as infringements. The statute rule on this subject is a very simple one, and is really the only general guide to be observed. It is the 14th section of the Act of July 4th, 1836, and is as follows: "Whenever, in any action for damages for making, using, or selling the thing whereof the exclusive right is secured by any patent heretofore granted, or by any patent which may here-
[328] after be granted, a verdict shall be rendered for the plaintiff in such action, it shall be in the power of the Court to render judgment for any sum above the amount found by such verdict as the *actual damages* sustained by the plaintiff, not exceeding three times the amount thereof, according to the circumstances of the case." That is, the power is given to the Court to treble the damages in aggravated cases, but the jury are limited to the *actual damages* which the plaintiff has sustained. Therefore, looking at all the evidence in the case in respect to the three hundred machines, if they
[329] were made in violation of the patent, it is a question of fact for you to determine what are the actual damages which the plaintiff has sustained.

Exceptions to the Charge.

To so much of the charge of the Court, as instructed the jury in substance, that the plaintiff, in his patent of January 31st, 1845, did not claim the reversed angle of the teeth of the blade as a distinct invention, but only claimed it in combination with the peculiar form of the fingers described in the same patent, the defendant's counsel excepted.

[330] The defendant's counsel requested the Court to instruct the jury, that, if they should be satisfied, that Hiram Moore was the first inventor of the reversed angle of the teeth of the blade, and that the plaintiff was notified of that fact by the testimony of Moore on the trial of this cause in June, 1851, and had not yet disclaimed that invention, then in judgment of law, he has unreasonably delayed filing his disclaimer, and the verdict should be for the defendants.

The Court declined so to instruct the jury, and the defendant's counsel excepted to the refusal.

[331] The defendant's counsel further requested the Court to instruct the jury, that, if they should be satisfied that Hiram Moore was the first inventor of the reversed angle of the teeth of the blade, and that the plaintiff was notified of that fact, by the testimony of Hiram Moore on the trial of this cause, in June, 1851, and had not yet disclaimed that invention, then it was a question of fact for them to decide whether the plaintiff had or had not unreasonably delayed the filing of a disclaimer; and, if they should come

[332] to the conclusion that there had been such unreasonable delay, their verdict should be for the defendants.

The Court refused so to instruct the jury, and the defendant's counsel excepted to the refusal.

The defendant's counsel requested the Court to submit to the jury the question under the evidence in the case, whether the plaintiff did or did not claim, in his patent of January 31st, 1845, the reversed angle of the teeth of the blade independent of any combination.

The Court refused to submit that question to the jury, and the defendant's counsel excepted to the refusal.

[333] The defendant's counsel requested the Court to charge the jury, that, whether the adjustability of the inner bow of the divider, as described in the plaintiff's patent, was a necessary ingredient of the divider, was a question of fact for them to determine; and if they should find that it was, and that the defendants did not use it, that then the defendants did not infringe that claim of the plaintiff's patent.

The Court refused so to instruct the jury, and the defendant's counsel excepted to the refusal.

The Court, on that point, then instructed the jury as follows: The

[334] inside iron in the plaintiff's divider is adjustable, so that it can be raised or lowered at pleasure. In heavy grain that stands high, and may be cut high from the ground, it is desirable to raise the reel sometimes, and then this inside iron can be raised also, to insure the division of the grain, and cause the reel to overlap and carry all the grain to the cutter. It is claimed by the plaintiff, that, although the defendants use no inside iron, yet they attain the same result, by the shape of the inside of their divider, which thus answers

[335] to the inside edge of the plaintiff's divider. The defendants insist, that, assuming this to be true, their divider has no such adjustability as the plaintiffs, and is therefore distinguishable from it. The answer to that position is this. The adjustability does not vary the principle of operation of the divider. It enlarges its capacity, so that it may be worked in heavy grain. But the principle and mode of operation of the divider are the same, whether the inner iron be adjustable or not.

[336] The defendant's counsel excepted to this part of the charge, insisting that it was a question for the jury.

The defendant's counsel further requested the Court to instruct the jury, that the plaintiff, if entitled to a verdict, was entitled to so much as the jury should be satisfied was the increased market value of the machines manufactured by the defendants, by reason of the use of the two improvements which they are charged with infringing, in place of using any other kind of divider and reel-support which had been before in public use.

[337] The Court refused to instruct the jury in relation to the subject-matter of such request, otherwise than they had already charged, and the defendant's counsel excepted to the refusal.

The defendant's counsel also asked the Court to instruct the jury, that, from the facts that Bell's machine operated successfully in 1829, and that it operated well also in 1853, they were at liberty to infer that it had operated successfully in the intermediate period, or some part of it.

But the Court held and charged, that there being no evidence respecting it, except at the trial of it in 1829, and the trial of it in

[338] 1853, the jury could not infer anything on the subject, and refused to charge as requested. The defendant's counsel excepted to the refusal, and also excepted to the charge in this respect:

And inasmuch as the said several matters so excepted to on the part of the defendants, and the said exceptions so taken by them do not appear by the record of the verdict aforesaid, the counsel for the defendants did then and there propose their aforesaid exceptions to the opinion of the said Court, and did request the Judges thereof to put

[339] their seals to this Bill of Exceptions containing the said several matters and exceptions; and thereupon the said Judges, at the request of the said counsel of the defendants, did put their seals to this Bill of Exceptions, on the 18th day of October, 1854.

[L. S.] S. NELSON,
[L. S.] N. K. HALL.

(*A.*)

Letters Patent of January 31*st*, 1845.—*No.* 3895.

The United States of America, to all whom these Letters Patent shall come.

Whereas Cyrus H. McCormick, Rockbridge, Virginia, has alleged

[340] that he has invented a new and useful improvement in reaping machines, which he states has not been known or used before his application; has made oath that he is a citizen of the United States, that he does verily believe that he is the original and first inventor or discovery of the said improvement, and that the same hath not to the best of his knowledge and belief been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the [341] said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Cyrus H. McCormick, his heirs, administrators, or assigns, for the term of fourteen years from the 31st day of January, one thousand eight hundred and forty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Cyrus H. McCormick in the schedule hereto annexed, and is made part of these presents.

[342] In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand at the City of Washington, this 31st day of January, in the year of our Lord one thousand eight [L. S.] hundred and forty-five, and of the independence of the United States of America the sixty-ninth.

J. C. CALHOUN,
Secretary of State.

Countersigned and sealed with the seal of the Patent Office.

HENRY L. ELLSWORTH,
Commissioner of Patents.

Specification of Letters Patent of January 31st, 1845.

[343] To all whom it may concern:

Be it known that I, Cyrus H. McCormick, of the County of Rockbridge, and State of Virginia, have invented certain new and useful improvements upon my patented reaping machine, and I do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification.

The first improvements which I would describe are in the cutting apparatus as follows, viz.: The blade case, A A A A A 2, in which [344] the blade B B B B B 2 plays, and is secured, is a straight plate of iron, the length of the blade, say 1¼ inch wide, ⅜ inch thick on the back, and less than ⅓ inch on the front edge, as at A, fig. 3;

to the upper side of this plate is riveted a back, A 1, fig. 3 and 5, say $\frac{3}{16}$ inch thick (thickness of the blade), and $\frac{5}{8}$ inch wide, leaving a width of $\frac{5}{8}$ inch in front of the back, as at A 2, fig. 3, for the blade
[345] to act upon. The end of this plate next to the crank is widened (towards the front), as at A 2, figs. 5 and 9, and turned up so as to receive and fit the end of the blade (giving it room to act), which is also extended in width, as hereafter described. The other end of the blade is also widened in like manner.

At the ends, the width of the blade B is extended in front, as at 4 4, figs. 4, 5, say to $1\frac{3}{4}$ inch, being twice its width at the cutting
[346] part, so that the edge of the blade, though projecting over the case $\frac{1}{4}$ inch (as at B 1, fig. 3), is firmly and sufficiently supported by the ends, and prevented from a tendency to wear and turn down from the pressure of the cutting. The teeth of the blade are similar to those of a common sickle, except that their angle is alternately reversed in spaces of $1\frac{1}{4}$ inch (more or less), as at B 3, fig. 4, on an inverted section; the object of which is to equalize the cutting in both directions, as the blade vibrates, and more effectually
[347] to keep the blade free from choking, by cutting itself clear of blades of wheat, &c., in both directions.

The blade-case is secured to the two projections of the frame of the platform C at 7, 7, 7, 7, figs. 1 and 5, say three or four inches forward of the front piece, C, of said platform, and it is supported between, at suitable distances apart, by two or three iron bearers, e, as shown in the cross section, fig. 3, screwed fast to the front piece
[348] of the platform (C), and so bent (downward) as to let straw or blades that may get in work out.

The fingers D D D (27 in number, more or less), are made of bars of wrought iron (but might be cast) about $\frac{5}{8}$ inch square, one end of which is widened into a shape resembling a spear. These fingers are made fast in the frame of the platform, C, and extend forward above the blade, so that the hinder angle (d, fig. 5) of the spear is just behind the serrated edge, b, of the blade, B, thereby forming an acute
[349] angle between the edge (b) of the blade and the shoulder (d) of the spear by which the grain is prevented from yielding to the touch of the blade (B) as it vibrates, and is held fast, so that the cutting is insured; and that, too, dispensing with the under part of the finger (as with the double bearer or finger) on which blades, grass, &c., are liable to lodge and choke the machine. The fingers are intended to fit pretty close to the edge of the blade, and to be bent up a little from the back, to prevent choking, as at B 1, B 2,
[350] fig. 3. The blade may either act on a level with the upper surface of the platform, or below it, as at present constructed.

Next, the driver, F (or connecting rod), is made of two pieces, F 1, F 2, put together with screw bolts, and so hollowed out in the inside (as at f, f, fig. 8) as to receive round (or cylindrical) followers, G G G, in which the wrist of the crank (I I I) revolves, to be kept tight on

the crank by the key 10, fig. 6, instead of the flat ones; by which
[351] arrangement they are enabled to roll in the driver so as to accommodate themselves to any angle of the crank, varied by changing the height of cutting, thereby dispensing with extra followers, to suit different sets of the machine, and the trouble of changing them. The machine is at present constructed for two heights of cutting, 8 and 10 inches (might have more variations) which is effected, on the out or tongue side, by two joints in the framework; one at the crank or connection of the hounds (N N) and
[352] platform (C) Y N V, the other at the connection of the hounds and tongue (P) O o Z; the two bolts Y and Z being pivots to the two joints, and the axle of the main ground wheel at A (in the two hounds) a pivot on which to turn the frame to effect the change required. When the bolts V and O are in the lower holes of the hounds and tongue, the height of the blade from the ground will be eight inches (which is the lower set). The point of the tongue being
[353] fixed and immovable by the breast piece Q made fast to the horses' hames by removing the bolts V and O into the holes V and o of the hounds and tongue upon the pivot A, as before described, the hounds, together with the wheels, crank, and other frame work attached to them will turn, sinking the joint O o Z, and raising the joint Y V V, and consequently the blade, to 10 inches. By this operation the horizontal position of the platform, and of the blade and driver, they being attached by a pin at 11, 11, figs. 1, 5, 6,
[354] and 11, is preserved, whilst the turning of the hounds, crank, &c., as aforesaid, varies the angle of the crank to the blade and driver, and, but for the rolling of the followers in the driver, as before described, would twist the blade.

The application of the fly-wheel H upon the axle of the crank I above the wrist, by which means the weight of the driver is counterbalanced (one side of the wheel being heavier than the other), the changes of action in the blade regulated and effected with more ease,
[355] less friction and strain upon the machinery, and consequent liability to wear and get out of order, and from which uniformity of action and resistance, the action of the blade and wheels is kept up in situations where otherwise it would fail, by reason of the wheels slipping and not revolving.

The manner of ungearing the machine by the lever, J, so that when it is moving, and not cutting, the operation of the wheels and blade can be stopped conveniently. This is effected by securing the lever to the top of the out-hound by a screw-bolt, B, which serves as
[356] a fulcrum. One end of the lever extends say 4 or 5 inches back from the fulcrum to a suitable place, and is suitably shaped as a box, in which is placed and acts the lower end of the axle (g, at the pinion) of the wheel, L, that operates the crank; and on and near the lower end of which said axle is a pinion, M (of nine teeth), that gears into the master cog-wheel, P, of 30 teeth. At some

12 inches before the fulcrum is a loose pin, J 2, put through the
[357] lever and into the hound, which holds it firmly to its place. To ungear the wheels, it is then only necessary to take out the pin, and move the end of the lever in towards the master cog-wheel, which moves the other end with the pinion out of gear, and the pin being put again into the lever, and a different hole in the hound, it is kept out of gear until changed as before. This is important in moving the machine from place to place, and also in cut-
[358] ting around a piece of grain; it sometimes does not suit so well to cut on one side as on others.

The divider, K, is an extension of the frame on the left side of the platform, say three feet, before the blade, for the purpose, and so constructed as to effect a separation of the wheat to be cut from that to be left standing, and that whether tangled or not. E is a piece of scantling, say three feet long and three inches square, made fast to a projection of the platform by two screw bolts. To the point of
[359] this piece, at K, is made fast by a screw or bolt, L, a bow of tough wood, the other end of which is made fast in the hinder part of the platform, at R, and it is so bent as to be about $2\frac{1}{2}$ feet high at the (left) reel-post, and about 9 inches out from it, with a regular curve. The dividing-iron, M, is an iron rod of a peculiar shape, made fast to the point of the same piece, E, and by the same screw-bolt that holds the bow K. From this bolt this iron rises to-
[360] wards the reel S, at an angle of say 30°, until it reaches it; then it is bent so as to pass under the reel, as far back as the blade, and to fit the curve of it (the reel). From the bolt, in the point aforesaid, the other end of this iron extends, say 9 inches, along the inside of the piece, E, where it is held by another screw-bolt, M, and where it has a groove (or slot) in it, to admit the other ends being raised or lowered (turning on the point screw K as a pivot), to suit
[361] the height of the reel. By means of the bow to bear off the standing wheat, and the iron to throw the wheat to be cut within the powers of the reel, the required separation is made complete.

The manner of constructing the hounds, N, N (or main wheel-pieces), and of connecting them with the tongue (P), and forming the movable joint, O O Z, as before described, corresponding with the joint Y V V, in changing the height of the cutting; by which construction, too, the frame is greatly simplified and strengthened, sufficiently so to control the action of the machine firmly and perma-
[362] nently (the inside hound operating as a direct and strong brace to it) by means of the tongue, P, which is extended, say 10 feet, forward, so as to balance the machine upon its two ground wheels T and U, and is attached to the breast-piece Q, as before described.

The reel-post, R (on the left side of the machine), instead of being

placed before the blade, standing perpendicularly and braced as before, is set, say nine inches, behind the blade, as at U, and so leaned
[363] forward as to bring the middle of it, or point R, at which the end of the reel is supported, to its former perpendicular; thereby, too, so putting the top of the post V forward, as to admit of being braced directly to the tongue, P (by means of the tongue-post T, for the purpose of raising the end of it a little), by the brace, S, passing partly over and in front of the reel. By this arrangement, first, the bracing, as described, is effected with much more simplicity and strength; and secondly, the lower end of the post (at U) being
[364] behind the blade, and crooked out as at R 2 (the end of the dividing-iron at M being bent inward), all tendency of straws hanging upon it (the post), and interfering with the cutting, is removed.

The top of this post, and front brace, (S,) might be dispensed with, by making the frame of the platform heavier and stronger, but it is believed not so well as at present constructed.

The manner of attaching the small ground wheel to the left side of the platform, as at U, fig. 2, by having different holes in the
[365] frame, as at U 1, for varying the height (by changing the axle of the wheel in them) of the cutting, and cutting away the under side of the frame at n, behind the axle, to prevent the collecting of earth and gravel by the upward motion of the wheel, so as to stop its revolution.

The manner of attaching the sand board, W w, to the frame, between the main ground wheel and the other wheels, driver, &c., by constructing it of two pieces at right angles to each other; the piece W being placed between the ground wheel and master cog wheel,
[366] and made fast by the bolt V; the other post, W, passing between the ground wheel and driver, and made fast to the brace q.

And, lastly, the straw board X, made fast to the wheel post r, (at r,) and to the brace, (at q,) for the purpose of keeping the grain from the wheels, driver, &c.

I claim, 1st, the curved (or angled downward, for the purpose described) bearer, for supporting the blade in the manner described.

2d. I claim the reversed angle of the teeth of the blade, in manner described.

3d. I claim the arrangement and construction of the fingers, (or
[367] teeth for supporting the grain,) so as to form the angular spaces in front of the blade, as and for the purpose described.

4th. I claim the combination of the bow, L, and dividing iron, M, for separating the wheat in the way described.

5th. I claim setting the lower end of the reel-post, R, behind the blade, curving it at R 2, and leaning it forward at top, thereby

favoring the cutting, and enabling me to brace it at top by the front brace, (S,) as described, which I claim in combination with the post.

CYRUS H. McCORMICK.

[368] Witnesses: T. C. DONN,
R. J. A. CULVERWELL.

(B. & C. were stricken out.)

(D.)

In the Circuit Court of the United States, for the Northern District of New York.

CYRUS H. McCORMICK
v.
WILLIAM H. SEYMOUR and DAYTON S. MORGAN. } In equity.

Account of sales of Seymour & Morgan's reapers, rendered in pursuance of the order of this Court, made in the above entitled cause:

The number of machines manufactured by the defendants up to the present time is three hundred.

Of the above there have been sold and delivered, as near as these
[369] defendants can state, two hundred and forty machines, in the States of Illinois, Wisconsin, and Michigan, at one hundred and twenty dollars each; a small part of which has been paid in cash, and the balance generally secured by notes, payable at various times thereafter. And there have been sold in the State of New York thirty-nine machines, at one hundred and five dollars each, except that eleven of them were sold for cash at one hundred dollars each, and three or four others at a few dollars less.

The remaining twenty or twenty-one machines are nearly all in
[370] the hands of agents in the Western States for sale, and some part of them may have been sold, but these defendants have no information with regard to such sales.

Dated Brockport, August 20th, 1850.

SEYMOUR & MORGAN.

Northern District of New York, Monroe County, *ss.*

Dayton S. Morgan, one of the defendants in the above entitled cause, being duly sworn, says, that he has charge of the books of the firm of Seymour & Morgan, and keeps the accounts thereof, so far as relates to their furnace and machine business, and the manu-
[371] facture and sale of reapers, and that the above statement is a correct account of the sale of reapers by them during the present year, so far as he is able to give such account; the information in regard to such sales being derived chiefly from the agents of defendants, engaged in selling and delivering such machines in the Western States; and further this deponent says not.

DAYTON S. MORGAN.

Sworn this 21st day of August, 1850, before me,
JOHN T. LACY,
Clerk of Monroe County.

(*E.*)

John Voice, being carefully examined and cautioned, and duly
[372] sworn to testify the whole truth and nothing but the truth, saith:

Question 1st. What is your name, age, residence, business, and are you acquainted with the parties to the suit?

Answer 1st. John Voice; I am 38 years of age; I reside in Chicago; I am carpenter by trade, but for the last five years, most of the time have worked at reaping machines; I only know the plaintiff in the suit.

Question 2d. Are you or not acquainted with the practical operation of various kinds of machinery and particularly of reaping machines; if yea, state particularly your means of knowledge, and the extent thereof?

[373] Answer 2d. I am acquainted with the practical operation of various kinds of machinery and particularly of reaping machines; I have acquired the knowledge by practice and working on the machines.

Question 3d. Have you seen the reaping machines at work in the grain field; if yea, when, and how often, and how many, and whose machines?

Answer 3d. I have seen them working in the fields every year, more or less, for the past five years; I have seen a great many work, from 50 to 100 in a year sometimes.

[374] In 1848, I put up a great many of McCormick's machines in the fields, and saw them work; in 1849 and 1850, I also put up McCormick's machines and saw them work, and have done so every year until last year; I have seen Seymour & Morgan's machines work, and Burral's machines, and Mr. Danforth's machines; I have seen others, but don't recollect their names.

Question 4th. Had the various machines of which you have spoken rakers' seats attached to them, and were they or not used by the persons operating the machines in each case?

[375] Answer 4th. All the machines that I have seen had rakers' seats attached to them, and the operators used the seats.

Question 5th. Do you understand the practical operation and use of the raker's seat as connected with the reaping machine, and as compared with the operator walking on the ground; if yea, state fully, and state what, if any, advantage the raker's seat upon the plaintiff's machine is, in its operation?

Answer 5th. I do; the raker's seat is a place fixed upon the machine for a man to sit or stand to rake off the grain, otherwise he

[376] would have to walk on the ground, which he could not well do, to follow it all day, nor could he do it so well any way; I have tried both ways.

JOHN VOICE.

Subscribed and sworn to, this 12th Oct'r, 1854, before me,
GEO. W. MEEKER,
U. S. Commissioner.

(*F.*)

Harvey D. May, being carefully examined and cautioned, and duly sworn to testify the whole truth and nothing but the truth, saith:

Question 1st. What is your name, age, residence, business, and are you acquainted with the parties to this suit?

[377] Answer 1st. Harvey D. May; I am 50 years of age; I reside at Belvidere, Illinois; I am a farmer, sometimes a miller, and have been in the merchandize business some; I am at present a miller; I know the plaintiff, but not the defendants.

Question 2. Are you or not acquainted with the practical operation of various kinds of machinery, and particularly of reaping machines; if yea, state particularly your means of knowledge and the extent thereof?

Answer 2d. I am, and particularly of reaping machines; since 1848, I have been acquainted with McCormick's reapers, when I saw

[378] one work, and since 1849 I have been selling them for him, and have all that time been well acquainted with them, and have seen them work.

Question 3. State whether or not you have seen other machines besides McCormick's work; if any, when, and had or had not all of said machines rakers' seats attached, except those which were self-rakers?

Answer 3d. I have seen Seymour & Morgan's, Fountain's, Barker and Laves', and Hussey's work; they all had rakers' seats.

Question 4. Had any of the machines of which you have spoken reels attached; if yea, which?

[379] Answer 4. All had reels except Hussey's.

Question 5. State whether or not you are acquainted with the use of the raker's seat upon the machine of the plaintiff, and the operation of said machine; if yea, state what advantage, if any, the raker's seat is to said machine?

Answer 5. I am acquainted with the raker's seat upon the plaintiff's machine, and am also acquainted with its operation; I consider the raker's seat as indispensable to the successful operation of the machine.

Question 6. State the particular way in which the machine is benefited by having the raker's seat attached?

[380] Answer 6. It enables the raker to ride on the machine while raking, and to preserve his balance while doing so in

rough ground; I do not think it possible to rake any length of time without riding on the machine.

Question 7. Have you had any experience in raking with a machine while walking; if yea, what, and have you seen any one else rake walking?

Answer 7. No, sir; I have not done it myself, nor have I seen any one undertake it.

Question 8. Are you or not acquainted with the arrangement and
[381] operation of the dividing apparatus on the plaintiff's machine as constructed since you have known it; if yea, describe it, and state of what advantage it is, if any, in the operation of said machine?

Answer 8. I am acquainted with the arrangement and operation of the dividing apparatus on the plaintiff's machine as constructed since I have known it; it consists of a pointed plank, projecting some 18 inches to 2 feet in front of the reaper, sharp point forward; there is an iron attached to it, calculated to raise the grain after it is
[382] divided, to bring it on to the reaper in a convenient shape, for cutting; the point is calculated to separate the grain that is to be left standing from that which is designed to be cut; that is the office of the dividing apparatus as far as I know.

Question 9. Has or has not the iron of which you have spoken the effect of pressing the grain, or can it be altered so as to produce the effect of pressing the grain inward under the reel as well as upward, and what, if any, is the benefit to said machine by such arrangement?

[383] Answer 9. The iron of which I have spoken, has the effect, and can be so altered as to press the grain inward under the reel as well as upward; the benefit of the machine is when it is bad driving; when they drive in or out too far, it brings the grain all in so that it is all cut; another benefit is, that when grain is lying down it raises it, and brings it into the machine.

Question 10. Have you or not ever seen any reel upon a reaping
[384] machine supported by an upright post, direct from the framework of the reaper?

Answer 10. I have seen one, but never saw one in operation.

Question 11. What would be the effect of such a support to the reel from a free entrance of the grain to the platform of the reaper, particularly if the grain leaned to the left, or was tangled?

Answer 11. It would be liable to clog it, and particularly if it was a little damp.

Question 12. Do you know of Seymour and Morgan, the defendants, selling their reapers in this or adjoining states, and, if so, to what extent?

[385] Answer 12. I think I have seen from half to a dozen of their machines sold by their agents in the vicinity of Belvidere. I don't recollect seeing of any of them sold before 1850. In 1851, some were being offered.

H. D. MAY.

Subscribed and sworn to this 12th October, 1853, before me,

GEORGE W. MEEKER,
United States Commissioner.

Cross-examined by Defendant's Counsel.

Question 1. State the construction of the seats on those machines on which you saw the rakers' seats attached?

[386] Answer 1. Generally the seats were so constructed, that a man could straddle the seat, and stand or sit at pleasure. On Hussey's machine, there is a seat which you cannot stand on, if I recollect right.

Question 2. Do you know whether the dividing apparatus of which you have been speaking, is the same as that patented by Mr. McCormick?

Answer 2. I do not know.

Question 3. Are you an expert in mechanics?

Answer 3. I am fully acquainted with mechanics.

H. D. MAY.

[387] Subscribed and sworn to this 12th October, 1854, before me,

GEORGE W. MEEKER,
United States Commissioner.

(*G.*)

Isaac Preston, being by me first duly examined, and cautioned, and duly sworn to testify the truth, the whole truth, and nothing but the truth, saith as follows.

Question 1. What is your age, residence, and occupation, and name, and are you acquainted with the parties to this suit?

Answer 1. Isaac Preston is my name. I am 61 years of age. I reside at St. Charles. I am a farmer now, and used to be a mechanic. I have been employed for the last six years partly as agent for the

[388] plaintiff's machines. I am acquainted with the plaintiff and Mr. Seymour, one of defendants.

Question 2. What, if anything, has been your means of knowledge in regard to the practical operation of machinery, and particularly of McCormick's reaper?

Answer 2. I was raised a tanner and currier, and followed my business for 28 years, including my apprenticeship. For some four or five years of my employment in that trade, I carried on business, by machinery, in Western New York. For the last six years, I have been engaged in the agency, from six to twelve counties in Illinois, of McCormick's reaping machine. I commenced with McCormick,

[389] Ogden & Co., during which time, I have spent from six to nine months every year in selling, putting up, and trying the machines in harvest, and settling for the machines with the farmers.

Question 3. What, if any, other machines than those of the plaintiff, which had reels attached to them, have you seen in operation? State particularly, whether they all had raker's seats attached to them, or a place for the raker to stand or sit on the machine?

Answer 3. Manney's; Morgan and Seymour's; Rugg's; Flags and Ewings'; Smith's; A. Waulkegan Company's; Atkinson's self-raker,
[390] manufactured by John S. Wright; Palmer and Williams' self-raker; Haines' Header, manufactured for heading and reaping, with a reel and raker's stand. All them, except Palmer and Williams' self-raker, and Wright's self-raker, have raker's seats, or places for the raker to stand or sit upon the machine.

(The witness having here stated, in reply to a question of the defendant's counsel, that his compensation as agent was a commission on his sales, and that he was now engaged in the agency on the
[391] same terms, the defendant's counsel entered an objection to the witness's testimony.)

Question 4. State whether, or not, you have had any means of knowing, in regard to the operation and use of the raker's seat upon McCormick's machine? if yea, state what your means of knowledge have been, and what advantage, if any, said raker's seat is to the machine?

Answer 4. I have had ample means of seeing the use and operation of the machine in all its parts, under all circumstances in which it could be used in working in different kinds of grain. I have been
[392] with the machines, settling with the customers, in harvest, the machines having been sold on trial, for six successive harvests. I consider the raker's seat as an indispensable appendage to the machine.

Question 5. In the various machines of which you have spoken, have you seen any instance in which this machine was attempted to be operated, by the rakers walking upon the ground, instead of riding upon his seat? if yea, what was the success?

Answer 5. I never have seen an instance of the kind.

Question 6. What, in your opinion, would be the comparative value
[393] of a machine without a raker's seat, and one with it? What would be the comparative demand, and value in the market, of the respective machines.

Question objected to.

Answer 6. For a machine, from which the grain had to be raked off, there would be no comparative value. One without a seat, couldn't be sold, in my opinion, at *at* least the difficulty would amount to an entire prohibition. The crops of straw, in the West, are heavier and taller than in New York, and that very much increases the difficulty of walking in them. It would be a man's business, to follow a machine all day without raking.

[394] Question 7. Do you know what is the practical operation of the dividing apparatus in McCormick's machine, and can

you describe such apparatus, its operation? if yea, describe it; state the manner in which the reel is supported, and what advantage, if any, the dividing apparatus is to said machine.

Answer 7. I think I do. On the left side of the machine, running into the grain, is the dividing point; it projects some 18 or 20 inches, possibly 2 feet, forward of the cycle edge, pointed, at the forward end,
[395] and some 10 or 12 inches wide, at the back end—about that. An iron appended to the point of the machines, which may be lowered or raised, to suit the condition of the grain being cut, whether it is lodged, tangled, or standing, and to throw it in upon the platform; and also a similar appendage on the outside, to throw the standing grain out, the effect is to keep a passage clear for the machine, and from clogging, and to obviate the chances of leaving a comb of standing grain inside the dividing point.

[396] Question 8. State whether, or not, you have ever seen a reel, supported by a post direct from the framework of the reaper, and state, if you know, what would be the effect of such support forward of the cutting apparatus of the reaper?

Answer 8. I have seen a good many machines with a reel post directly under the machine, from the framework, but have never seen but one with the reel post forward of the cutting apparatus. The effect, in that case, would be to choke and clog the machine.

Question 9. Do you know whether, or not, the defendants sold, in
[397] the year 1850, any of their machines in the Northwest? if yea, how many within your knowledge? State what effect such sales, if any, by the defendants had upon the sale of plaintiff's machines?

Answer 9. I know that the defendants sold, in 1850, some of their machines in the Northwest. I know of two particularly, sold by Morgan and Seymour's agents. I saw other machines at work, which I knew to be the defendant's machines. They were marked, as manufactured in 1850. These machines had the effect to prevent the sale of McCormick's machines, as I understood it. Farmers, who
[398] bought those machines, thought those machines were most like McCormick's, but an improvement on McCormick's, and on that account bought them. That was their common testimony. Answer objected to.

Question 10. Had you, at any time, an interview with one or more of the agents of the defendant's machines, in which conversation was had in relation to the relative merits of the machines, or other matters in relation to the machines? if yea, state with whom, when, and what was such conversation? Objected to.

[399] Answer 10. I met with one who was acting as agent of the defendants, in Peoria County, Illinois. He had just sold three machines, in less than a day. He made representations to me, that the machine was McCormick's machine, only a great deal better in some respects. He told me, that the defendants had been prose-

cuted by the plaintiff for infringement, that they had had a trial, and had beaten McCormick, and that he had all the costs of the suit to pay, and that they were now free. I had told them that I was a
[400] farmer, and might want to buy a machine, and he made these statements to me under that impression.

Question 11. Is, or is not, the dividing iron, to which you have referred, so arranged, that it may be bent more or less under the reel, and in this way be overlapped by the reel, and is, or is not, this an important part in the arrangement of the dividing apparatus?

Answer 11. It is so arranged that it may be raised and lowered, or bent to and fro, to accommodate the condition of the grain being
[401] cut. It is very important, and greatly facilitates the working of the machine in bad cutting.

ISAAC PRESTON.

Subscribed and sworn to this 13th day of October, 1854, before me,

GEORGE W. MEEKER,
United States Commissioner, District of Illinois.

Cross-Examined.

Question 1. Cannot a reaper, with a seat as in Hussey's machine, do the work as completely as with McCormick's seat?

Answer 1. The present construction of McCormick's machine, would not admit of placing the raker's seat on the back end of the platform.

Question 2. To the dividing apparatus, that you have described, the same as patented by the plaintiff?

Answer 2. I cannot say.

ISAAC PRESTON.

[402] Subscribed and sworn to this 13th day of October, 1854, before me,

GEORGE W. MEEKER,
United States Commissioner, District of Illinois.

(*H.*)

George W. Osborn, having been by me first duly cautioned and examined, and duly sworn to testify the truth, the whole truth, and nothing but the truth, deposed as follows:

Question 1. What is your name, age, residence, and occupation, and do you know the parties to the suit?

Answer 1. George W. Osborn; I am 42 years of age; I reside on
[403] Sturge's Prairie, St. Joseph County, Michigan; I am a farmer. I do not know any of the parties to this suit.

Question 2. Have you been accustomed to the use of reaping machines? and, if so, what machines have you used, and how long?

Answer 2. I have, more or less, for 4 or 5 years; I have used the

old McCormick reaper, so called, and have used a little the new McCormick machine; I have also used Manney's a little this season. I bought, last spring, one of Seymour & Morgan's self-reapers, and received it just before harvest.

[404] Question 3. Did the machine of Seymour & Morgan's, you bought, a raker's seat upon it?

Question 4. State all the facts in reference to the use of that machine during your harvest.

Answer 4. I think I used it about an hour, and broke the crank of the self-raker. I then took off the circular part of the platform, and followed on foot, and raked behind the machine. The next day I got another crank, and worked it part of the day, and broke that one. I then took the power off that drives the self-raker, and put [405] on a platform and finished the harvest. The platform was a place for the raker to stand, and we put a hoop round to guard him.

Question 5. Did you find it easy to follow the reaper on foot, and rake?

Answer 5. I found it to be very hard work.

Question 6. From your knowledge of reaping-machines, would you consider any one to be valuable which did not provide a place for the raker to ride? and, if not, give your reasons for your opinion?

Answer 6. I wouldn't buy a reaper without it was provided with [406] a raker's seat, as I should think from my experience such an one would be worthless, it being too fatiguing to follow and rake.

G. W. OSBORN.

Subscribed and sworn to this 13th of October, 1854, before me,
GEORGE W. MEEKER,
United States Commissioner for the District of Illinois.

(*I.*)

Albert Roberts, being by me cautioned and examined, and duly sworn to testify the truth, the whole truth, and nothing but the truth, deposed as follows:

Question 1. What is your name, age, residence, and occupation? and do you know the parties to this suit?

[407] Answer 1. Albert Robins; I am 19 years of age; I reside at Sturgess, St. Joseph County, Michigan. I am a farmer; I do not know the parties to this suit.

Question 2. Have you, or not, ever raked the grain from a reaping-machine, or more than once? and, if so, how many different machines, and when?

Answer 2. I have only raked the grain from one, that was Seymour & Morgan's machine—so marked. It was at Sturgis, Michigan.

Question 3. State how you raked the grain from that machine? under what circumstances, and how long?

Answer 3. Where the power was that drove the self-reaper a plat-
[408] form was placed, and a belt was then fastened to keep me from slipping, and I raked the wheat about three feet back of the platform. I used this near two days.

Question 4. Did you attempt to use the rake walking on the ground? and, if so, did you find it difficult?

Answer 4. I raked about 80 rods walking on the ground, and found it rather difficult.

Question 5. Would you, or not, think a machine valuable, that did not provide a place for the raker to sit or stand upon?

(Objected to.)

[409] Answer 5. I should not think it valuable.

A. ROBERTS.

Subscribed and sworn to this 13th of October, 1854, before me,

GEORGE W. MEEKER,

United States' Commissioner for the District of Illinois.

(*J.*)

Louis de V. Wilder, being first duly sworn and cautioned to tell the truth, the whole truth, and nothing but the truth, deposes and says as follows, viz.: I reside in Geneva, New York; in 1849 I resided in Brockport, New York. I know the parties to this suit; in October, 1849, I heard a conversation between the plaintiff and the
[410] defendant, Seymour, in front of Seymour's store at Brockport; the plaintiff had just returned from the West, and I met him in front of Seymour's store in the evening. While we were in conversation Mr. Seymour came out of his store and came up to us. Soon the matter of the reaper came up; the substance of what was said at that time between the parties was, that Mr. McCormick remarked that Mr. Seymour was infringing on his patent, and *the important part was the seat and the reel* which he spoke of as being
[411] infringed upon; that he considered he was infringing on his patent; he said to Mr. Seymour, if he went on manufacturing reapers that he would prosecute him, because he said he considered it an infringement on his patent. I do not know whether the defendants then had commenced manufacturing reapers. I was in their shop and furnace a number of times after that the following winter, and at one time saw a driving wheel they were manufacturing, which Mr. Seymour said was for the reaper. I saw them getting out the framework for the reaper.

Cross-examined by defendant's counsel.

[412] When Mr. McCormick said to Mr. Seymour he was infringing, his answer was, as near as I recollect, that he

thought not; that he was not infringing on his patent. I am quite sure it was the seat, and not the sickle, that Mr. McCormick complained of; it could not be over two or three months after that that I saw the defendants manufacturing, as I have stated.

Re-examined by plaintiff's counsel.

My best recollection is, indeed I am sure, that, the summer previous to the conversation in October, I saw a reaper leaving the defendants' shop, for the purpose of being tried.

[413] LOUIS DE V. WILDER.

(*K.*)

William H. Beach, being first duly sworn and cautioned to tell the truth, the whole truth, and nothing but the truth, deposes and says as follows, viz.: In December, 1850, I was foreman in the office of the Monroe Democrat, a newspaper published in the city of Rochester. I know Messrs. Seymour & Morgan, of Brockport; one of them, Mr. Morgan, is present in the room (pointing to him). (Shown a number of Monroe Democrat, bearing date 19th December, 1850,

[414] and shown an article in said paper signed Seymour & Morgan.) I think Mr. Morgan brought the article in manuscript for publication, I mean Mr. Morgan here present; up to that time I had not seen Mr. Seymour. He said he wished it published two or three times; I think it was three times he wished it published; he said, in reference to the pay for the article, "draw on us for the pay;" it was paid for, at least Seymour & Morgan are credited for the amount on the books of the establishment. The article was pub-

[415] lished once in the daily and twice in the weekly paper; the daily is called the Daily Democrat, and the other the Monroe Democrat, both published in same office. The weekly paper is made up from the matter contained for the preceding six days in the daily; the daily circulates in the city and country; the circulation of the daily in the country is about 900 daily, and about 1200 in the city; there are five thousand of the weekly circulated, about 250 of which is circulated in the city, and the rest in the country. (The

[416] article is here made an exhibit, with the newspaper, and is marked Exhibit A.) The manuscript was signed Seymour & Morgan, in the same manner as appears in the article; both the Daily and Monroe Democrat go into the surrounding and neighbouring counties.

WILLIAM H. BEACH.

Exhibit A, referred to in the deposition of William H. Beach.

New York reaper.—To farmers.

Our attention has been directed to an article published in some of the papers, by C. H. McCormick, which is only a stereotyped edition

of the humbug with which he has before tried to gull the farming community. We should suppose that, if experience had been worth
[417] anything to this disinterested manufacturer of Virginia reapers and humbugging advertisements, he would have learned that, if he cannot make a machine to compete with ours upon its real merits, he can never force a purchaser to buy or use his inferior article by boasting or threats. This C. H. McCormick, in all his publications, conceals the real point at issue between him and us. The reason undoubtedly is, he is ashamed to show how small a matter he is endeavoring to magnify into one of great importance. Any
[418] person may see, by reference to the publications paraded so extensively by McCormick, that the only infringement with which we are charged is on the improvements described in letters patent of October 23, 1847; and we propose to show the foundation of this charge by the following copy of his claim, which is all that has any reference to the suit between us:

Copy of the Claim.

"What I claim as my invention, and desire to secure by letters patent, as improvements on the reaping-machine secured to me by
[419] letters patent, bearing date the 21st of June, 1834, and the *the* 31st of January, 1845, is placing the gearing and crank forward of the driving-wheel, for protection from dirt, &c., and thus carrying the driving-wheel farther back than heretofore, and sufficiently so to balance the rear part of the frame and the raker thereon, when this position of the parts is combined with the sickle back of the axis of motion of the driving-wheel, by means of the vibrating lever, substantially as herein described.

"And I also claim, as my invention, the arrangement of the seat
[420] of the raker over the end of the finger-piece, which projects beyond the range of fingers, and just back of the driving-wheel, as described, in combination with and placed at the end of the reel, whereby the raker can sit with his back towards the team, and thus have free access to the cut grain laid on the platform and back of the reel, and rake it from thence on to the ground by a natural sweep of his body, and lay it in a range at right angles with the swath, as described; thereby avoiding unevenness and scattering in
[421] discharge of the wheat, as well as accomplishing the same with a great saving of labor."

Now let any individual examine both machines, in connection with the above claim, and see if he can find a shadow of an infringement on our part. We have never yet met the disinterested man who has taken this course, and has not at once come to the conclusion that the charge of McCormick's was a humbug of the silliest kind. He made an application for an injunction last summer, as he supposed

[422] just in time to keep our machines out of market; but, with the merits of the question fully argued, his motion was denied.

The following are the reasons why the suit commenced by McCormick against us was not tried at the last circuit held at Albany in October: The issue in the cause was joined less than thirty days before the commencement of the circuit. It was necessary for us to have the testimony of witnesses residing in Ohio, Indiana, Michigan, and Illinois, and measures were taken at the earliest moment to procure their depositions; but the time was so short, that only a single [423] deposition had been returned when the cause was called; we were therefore compelled to have the trial put off to the next circuit.

The court ordered an injunction to be issued, restraining us from manufacturing in the meantime such machines as we had manufactured the previous season. It is the practice of the court, where a defendant asks the postponement of a trial under such circumstances, to grant an injunction as a matter of course, if it be asked for, and without any reference to the merits of the controversy. According to this practice the injunction was ordered here, without a word said [424] by the court or counsel as to the merits of the controversy, by the same judge who, in August previous, had, after a full investigation of the whole matter, denied it. Besides, the affidavits on which the application to postpone the trial was made, showed that we did not intend to manufacture any more machines of that kind; it was therefore obvious that an injunction was a mere matter of form, doing no good, and producing no harm to any one.

We need no better recommendation for our machines than the fact, that while McCormick is warning the public against buying our [425] inferior machines, calling it a "total failure," &c., &c., he is at the same time appealing to the highest court in our land to protect him from our competition; a great display of consistency, truly. We last year received more orders for our machines than we could supply, and they gave universal satisfaction.

To expose all the falsity of McCormick's article would take more time than we care about devoting to so mean a business; but we must allude to the point where he claims, that the manufacturers, buyers, and sellers are all equally liable for an infringement, as some persons [426] may, perhaps, be misled by it. Now, we say that he can recover damages from only one party, and if he should succeed in beating and recovering from us, that ends all liability on the part of any one; and as we intend to see this matter through, no person need have the least fear in regard to the result. If we should get beat, we have ample means to pay all damages; but we have more ample means to beat Mr. McCormick in a way that will settle all his claims, either to improvements or original patents, and when he gets

[427] through with us we will guarantee that he will be glad to let others alone, and have less to say about "pirating on inventions."

We are now manufacturing several hundred of the New York reapers, for the harvest of 1851; and by the application of new principles lately patented, and to which we have the exclusive right, we are prepared to offer to the farmers of the United States and Canada a perfect reaping-machine, which, in durability of construction, perfect manner of cutting grain, and the ease with which it may be worked,

[428] has never been equalled. The following are some of the advantages proposed by this machine over any other heretofore used:

1st. The finger-piece is placed within the circumference of the driving-wheel, and the other ground-wheel placed nearly opposite and greatly increased in size, which lessens the power necessary to work the machine at least one-third, and does away with all the difficulty of backing and turning.

2d. The method of changing the cut is so improved, that it can be done instantly on the small ground-wheel by means of a lever, and

[429] on the driving-wheel in much less time than in any other reaper.

3d. The sickle or knife is constructed of patent hollow teeth, which cannot be clogged, and which, in case of accident, can be repaired by any good blacksmith without the least difficulty.

4th. The raker is placed on the back side of the platform, where he has his work directly before him, and is capable of performing it in a perfectly natural and easy manner, when compared with the old way of stretching from behind the gearing with his back towards the team.

5th. The gearing is of new and improved construction, combining

[430] great strength and durability with perfect simplicity of arrangement, and possesses great advantages in many respects over all similar machines.

We are now prepared to receive orders for the above machines. Our terms of sale, warranty, &c., will be as favorable as ever, and we shall spare no pains to make our work satisfactory, as we are bound to keep ahead of all others in the quality of our machines. We wish the inhabitants of Austria and South America to understand that we cannot do anything towards supplying them, until some one shall get

[431] up a machine that will drive us out of the North American market; for the present we can sell all we can make at home. In regard to any statements of Mr. McCormick, it is only necessary to know the man and his connection with the business, to know the motive which prompts him. We shall be happy to give further information to any who may address us personally or by mail.

SEYMOUR & MORGAN.

Rockport, Monroe County, New York, December 1st, 1850.

(L.)

Seymour & Morgan's Improved Reaping Machine, manufactured at Brockport, Monroe County, N. Y.

[432] The subscribers are preparing to offer the farmers a superior reaping machine. Having for years been engaged in manufacturing a large number of McCormick's reapers, they are confident that the reaper which they are now manufacturing is far superior in every respect to any other now in use. It was thoroughly tested in the harvest fields last year, and gave entire satisfaction to all who witnessed its operation. It surpasses any machine now before the public in many important points; the cutter or sickle being in sections, in case of accident can be repaired by a good blacksmith, without the owner being obliged to go to the manufacturers

[433] for a new blade. The ground wheel is 3 feet in diameter, and all the gearing runs in iron boxes. An early order is important from those wishing to purchase a machine, as we have already contracted for the sale of 300 for the West. In all cases a liberal warrant is given to the purchaser. The improved reaper was constructed under the supervision of our foreman, Mr. Geo. F. Burnet, who has been engaged three years for us in the business.

SEYMOUR & MORGAN.

BROCKPORT, Dec. 25th, 1849.

Certificates.

[434] SWEDEN, Nov. 12th, 1849.

Messrs. SEYMOUR, MORGAN & Co.: In my harvest last season I used one of your improved grain reapers. I had formerly used one of McCormick's improved Virginia reapers. I have had considerable knowledge of them. In comparison, I think yours decidedly preferable: Firstly, in point of perfection in cutting, which is the great desideratum, it is far in advance of his; and next, in ease of operation I think it has decided advantages. I did not obtain your reaper until a large part of my harvest was completed, consequently I had

[435] not an opportunity to test the amount that could be cut in a day; still I am satisfied that it is capable of cutting from 15 to 25 acres per day, and that too in the most perfect manner. I used no change of team. I did not find it necessary in doing an ordinary day's work, about 15 acres per day. I tested your machine in wet grain and when there was grass at the bottom; here I found it had a great advantage over other reapers in use, it being able to

[436] go through almost any grain, some badly lodged, without any apparent difficulty of clogging the knife; and from my experience I think it a valuable labor-saving machine, and would cheerfully recommend it to the attention of farmers, as I think grain

can be cut with it, all expenses counted, at half the cost of cutting it in the ordinary way. Wheat can be bound and shocked in a better manner and with less labor, besides a great saving in the waste of grain.

Yours, &c., F. P. ROOT.

I saw the aforesaid Seymour & Morgan's improved reaper in F. P.
[437] Root's harvest field, and do concur in the foregoing statement.

WM. ROOT, Esq.
D. H. ROOT.

I have seen the machine work in very heavy and also in wet wheat, where it performed well, and believe it to be an improvement upon McCormick's reaper. There was no clogging as in the case of McCormick's, and it must be a good machine if well made.

NATHAN LOCKE.

BROCKPORT, Nov. 13th, 1849.

Messrs. SEYMOUR & MORGAN—Gents: I used one of *our* improved reapers in my harvest, which worked better than any I have seen
[438] before used, cutting wheat when there is much grass without choking, which other machines which I have used would not do. I have had much experience with reapers, having purchased the first one of McCormick's brought to this State. I have since put a large number of McCormick's in operation at the West, and believe yours to be the most perfect reaper now in use.

A. CHAPPELL.

I used one of Messrs. Seymour and Morgan's reapers last harvest, and cheerfully recommend it to farmers as the best machine within my knowledge for cutting grain.

GEO. H. ALLEN.

BROCKPORT, November 13th, 1849.

[439] This may certify that I used, in my harvest of 1849, Seymour and Morgan's improved reaper, which worked to my entire satisfaction, cutting grain in all conditions. I believe it cannot be clogged in either grassy or green wheat. I have witnessed the operation of other reapers now in common use, and I believe it to be superior to any that I have seen; cutting wet or grassy wheat when other reapers cannot.

F. W. BREWSTER.

BROCKPORT, November 12th, 1849.

We have seen the trial of Seymour and Morgan's improved reaper

[440] in the harvest of F. W. Brewster, and having witnessed the operation of other reapers, we believe this the most perfect machine now in use.

J. A. HOLMES, ALLEC POTTER,
D. A. WHITE, W. THEO. DOWNS,
MORGAN RANDLE, O. A. ROYCE.

(*M.*)

Albert P. Dickey, one of the witnesses of said plaintiff, being present, and having been by me carefully examined and cautioned, and duly sworn to testify the whole truth and nothing but the truth, saith, and in answer to the interrogatories propounded to him, deposeth as follows:

First Interrogatory propounded by James H. Collins, counsel for
[441] the plaintiff. What is your age and occupation, and where do you reside?

Answer. My age is 32; my occupation is mechanic, fanning-mill manufacturer. I am also agent for the sale of several agricultural machines in the State of Wisconsin, and reside at Racine, in said State of Wisconsin.

Second Interrogatory by same. Do you know the parties to this suit, plaintiff and defendants, or either, and which of them; if so, how long have you known them?

Answer. I am well acquainted with Cyrus H. McCormick, the plaintiff, and have known him two years and upwards; I am partially
[442] acquainted with William H. Seymour, one of the defendants, and have known him about a year and perhaps a little over; I do not know Mr. Morgan personally.

Third Interrogatory by same. Are you acquainted with the reaping machine called "McCormick's Virginia Reaper;" if yea, how long have you known it, and where, and state whether you have been agent for the sale of said machine; and if so, how long and where?

Answer. I am well acquainted with it; I have known it for four years past: Firstly in Illinois, and the three years past in the State
[443] of Wisconsin; I have been agent for the same machine for the two past years in the State of Wisconsin, and have had the entire agency for the State of Wisconsin for that length of time.

Fourth Interrogatory by same. Are you acquainted with a machine called "Seymour and Morgan's Improved Reaping Machine;" if yea, how long have you known it, and where?

Answer. I am acquainted with it; I have known it from the first of July last up to this time, in the State of Wisconsin.

Fifth Interrogatory by same. Do you know one S. G. Williams;
[444] if yea, how long have you known him, and where does he reside, and do you know whether he has acted as the agent of the defendants for the sale of said defendants' reaping machine, and how long?

Answer. I do; am well acquainted with him; for one year past he resided at Janesville, Rock County, Wisconsin; I know that he has acted as the general agent for the sale of Seymour and Morgan's reaping machine for the State of Wisconsin, for the past year.

Seventh Interrogatory by same. Do you know whether said Wil-
[445] liams, in the performance of his said agency, interfered in any way with the sales of said McCormick's patent Virginia reaper? If yea, describe the manner of said interference, and state all the facts and circumstances in relation thereto, as far as you can remember?

Answer. S. G. Williams published, in the Janesville Gazette, the annexed notice, marked Exhibit (A), and also circulated the same in handbills about the state; also published in said Gazette the annexed notice, marked as Exhibit (B).

Ninth Interrogatory by same. Upon what do you predicate your judgment?

Answer. Last year I sold 200, and this year only 100 of McCor-
[446] mick's machines, and I have labored four times as hard, and expended more money to make the sale of 100, than the 200.

Tenth Interrogatory by same. Are you acquainted with machinery of this description, and do you know the principles of the two machines, McCormick's and Seymour & Morgan's? If so, please state what difference there is, if any, between the two, wherein they agree and wherein they differ?

Answer. I am well acquainted with machinery of this kind, having been for the past two years in the practical use of them, and having
[447] been a manufacturer of machines for the past sixteen years. I think I am well acquainted with the principles of the two reaping-machines spoken of. I consider the principles of the two machines the same, with a slight variation in the sickle; the cutting of McCormick's reaper is done by a straight reverted sickle-edged instrument; Seymour & Morgan's is done by a reverted sickle-edged instrument made in sectional scallops, riveted upon an iron bar which operates the same as McCormick's. The separating the wheat that
[448] is cut from that which is not cut, in McCormick's machine, is done by a board and an iron, which throws the grain on to the reaper when cut. Seymour and Morgan's is done by a board, which separates the grain and throws the grain upon the reaper when cut, the same as McCormick's board and iron does. The position of the raker to take or deliver the grain from the machine is the same in each machine, only that Seymour and Morgan have a different seat to sit upon; but the same in principle, and far inferior in point of ease and usefulness to the raker. The raker, when in a standing
[449] position, will find it much harder to discharge the grain from Seymour and Morgan's, than from McCormick's reaper. The gearing of the two machines being somewhat different, I should con-

sider McCormick's far preferable; less liable to get out of order, more durable, and of easier draft. There is a little more machinery in Seymour and Morgan's gearing, but the operation and result is the same as in McCormick's.

Eleventh Interrogatory by same. Which is the most useful and valuable machine?

Answer. I consider McCormick's the most useful and valuable machine.

Twelfth Interrogatory by same. What were McCormick's machines sold at?

[450] Answer. A hundred and twenty dollars on time, and a hundred and fifteen dollars cash on delivery.

ALBERT P. DICKEY.

Cross-examination.

Third Cross-interrogatory by counsel for defendants. What did you do towards manufacturing any such machines for 16 years, as stated by you?

Answer. I did nothing towards maufacturing reapers, but worked at fanning mills, and carried on the business of making threshing-machines; my business has been with the farmers for the last 16 years.

Fourth Cross-interrogatory by the same. What parts of the fanning-mill and threshing-machines did you work at?

[451] I have had the supervision, and carried on the business. I have worked at all parts, and made all parts of fanning-mills. I have served a regular apprenticeship at it with George W. Patterson.

ALBERT P. DICKEY.

(*Exhibit A, referred to by witness, Albert P. Dickey.*)

Seymour and Morgan's improved reaping-machines, manufactured at Rockport, Monroe County, New York.

The subscribers are preparing to offer to the farmers a superior reaping-machine. Having for years being engaged in manufacturing a large number of McCormick's reapers, they are confident that the reaper which they are now manufacturing is far superior, in every

[452] respect, to any other now in use. Their improved reaper was constructed under the supervision of the foreman, Mr. George F. Barnet, who has been engaged three years for us in the business. It was thoroughly tested in the harvest-fields last year, and gave entire satisfaction to all who witnessed its operation. It surpasses any machine now before the public in many important points. The cutter, or sickle, being in sections, in case of accident can be repaired by a good blacksmith, without the owner being

obliged to go to the manufacturer for a new blade. The ground-
[453] wheel is three feet in diameter, and all the gearing runs in iron boxes. We have commenced the manufacture of 500 for the next harvest, and Mr. S. G. Williams is our general agent for selling reapers out of this state, and is fully authorized to sell, collect, and do all business relating to the same.

SEYMOUR & MORGAN.

BROCKPORT, November 13th, 1849.

Certificates.

SWEDEN, November 15th, 1849.

Messrs. SEYMOUR, MORGAN & Co.:

In my last harvest I used one of your improved grain-reapers. I
[454] had formerly used one of McCormick's improved Virginia reapers. I have had considerable knowledge of them; in comparison, I think yours decidedly preferable. Firstly, in point of perfection in cutting, which is the great desideratum, it is far in advance of his; and, next, in ease of operation I think it has decided advantage. I did not obtain your reaper until a large part of my harvest was completed, consequently I had not an opportunity to test the amount that could be cut in a day, still I am satisfied that it is
[455] capable of cutting from 15 to 25 acres per day, and that, too, in the most perfect manner. I used no change of team. I did not find it necessary in doing an ordinary day's work, about 15 acres per day. I tested your machine in wet grain, and where there was grass at the bottom; here I found it had a great advantage over other reapers in use, it being able to go through almost any grain, some badly lodged, without any apparent difficulty or clogging the knife; and, from my experience, I think it a valuable labor-saving machine, and would cheerfully recommend it to the attention of far-
[456] mers, as I think grain can be cut with it, all expenses counted, at half the cost of cutting it the ordinary way. Wheat can be bound and shocked in a better manner, and with less labor, besides a great saving in the waste of grain. Yours, &c.,

F. P. ROOT.

BROCKPORT, November 13th, 1849.

Messrs. SEYMOUR & MORGAN:

GENTS:—I used one of your improved reapers in my last harvest, which worked better than any I have seen before used, cutting wheat when there is much grass without choking, which other machines
[457] that I have used would not do. I have had much experience with reapers, having purchased the first one of McCormick's brought to this state. I have since put a large number of McCormick's in operation at the West, and believe yours to be the most perfect reaper now in use.

A. CHAPPELL.

I used one of Messrs. Seymour & Morgan's reapers last harvest, and cheerfully recommend it to farmers as the best machine within my knowledge for cutting grain.

GEO. H. ALLEN.

BROCKPORT, November 13th.

This may certify that I used, in my harvest of '49, Seymour and
[458] Morgan's improved reaper, which worked to my entire satisfaction, cutting grain in all conditions. I believe it cannot be clogged in either grassy or green wheat. I have witnessed the operation of other reapers now in use, and I believe it to be superior to any that I have seen cutting wet or grassy wheat, when other reapers cannot.

F. W. BREWSTER.

BROCKPORT, November 12th, 1849.

We have seen the trial of Seymour and Morgan's improved reaper in the harvest of F. W. Brewster, and, having witnessed the opera-
[459] tion of other reapers, we believe this the most perfect machine now in use.

J. A. HOLMES,
D. A. WHITE,
MORGAN RANDLE,
ALLEN POTTER,
W. T. DOWNS,
O. A. ROYCE.

BROCKPORT, January 25th, 1850.

MESSRS. EDITORS: Our attention has been called to a notice in your paper, headed "Caution," informing the farmers that he, the subscriber, is authorized to sue all who sell or purchase Seymour and Morgan's reaper, as an infringement on McCormick's patent Virginia reaper, and signed—

A. P. DICKEY,
Agent.

The object of the caution is evidently intended to create the impression that our reaper really infringes on McCormick's right, and
[460] thereby hinder and prevent our selling and introducing a much better reaper in all respects. We have built and sold over four hundred (400) of McCormick's, and have given ours a thorough trial, and therefore we feel prepared to decide on the merits of them, and have no doubt but that the farmers will all sustain us in our opinion, after giving our reaper a trial. Our reaper does not infringe on McCormick's rights in any particular, but we do expect to infringe some on his sales, and believe the farmers will not object if they get
[461] a better reaper and made workmanlike. We will be prepared to attend to McCormick, should he venture to sue, and

guaranty all who purchase our reaper from any liability to McCormick.

SEYMOUR & MORGAN.

The undersigned, agent for the sale of the above-mentioned reapers, being informed that several persons are travelling in the State, and telling the farmers, that, if they buy Seymour & Morgan's reaper, they will be sued, &c.:

Now, therefore, I hereby give such persons notice, that I am authorized to sue all such persons, who, by their stories, make themselves personally liable for damages by preventing the sale [462] of S. & M.'s reaper. Sell McCormick's if you can, gentlemen, on its own merits, and let S. & M.'s reaper stand upon its own merits. That is all they ask or can receive; there is room for all. To the farmers the undersigned would say, that he will be happy to take their orders for Seymour & Morgan's reapers, on as good terms as to warranty, price, terms of payment, &c., as any other reapers are offered. When at home, he can be found at or near E. L. Robert's clothing store, west side the river, Janesville, and when absent Mr. Roberts will attend to the business. [463]

S. G. WILLIAMS.

JANESVILLE, February 8th, 1850.

(*Exhibit B, referred to by witness Albert P. Dickey.*)

JANESVILLE, March 26th, 1850.

MESSRS. EDITORS: I notice in your paper of March 21st two communications, one signed by A. P. Dickey, and the other by C. H. McCormick & Co., and will say a few words in reference to both. Although Mr. Dickey may have sold many machines which gave satisfaction, the inference which he draws and asserts to be a fact, "that these machines cannot be beaten by any reaping [464] machine in the United States," is not true, for said machine is, in many respects, already beaten by Seymour & Morgan. As to the assertion, "that S. & M. have agents travelling through this State, offering to sell the farmers reapers, which they represent to be McCormick's improved reapers, made by S. & M., at Brockport, N. Y.," so far as I know, is false. I know of no one selling S. & M.'s reapers but myself, and such as I have engaged to take orders, and I have not sold, or instructed any one to sell, any such [465] reaper. But we do sell, and intend to continue to sell, Seymour & Morgan's reapers, although it may not be agreeable to or suit the self-interest of some men. Mr. D. says, that the reapers made by S. & M. are much inferior to McCormick's. Did he ever see one of S. & M.'s reapers? He never did. I have sold more of McCormick's reapers than he ever did, and have seen Seymour & Morgan's reapers work in the harvest field, and know them to be in

every respect equal, and in many respects superior, to McCormick's.
[466] As to the more abundant caution, I give all interested particular notice, that I do not intend or wish to interfere with, or infringe upon, McCormick's rights in any way, but shall continue to sell Seymour & Morgan's reaper, without asking McCormick's agent's consent.

In reference to McCormick & Co.'s letter, it may be said, that there is no doubt but that McCormick may find many lawyers, who, looking at one side of the matter, and nothing loth to have a suit, may call his case clear; but there is two sides to all questions, and
[467] Seymour & Morgan know what they are about, and feel themselves perfectly able to meet Mr. McCormick in any shape he wishes to present himself, and are satisfied they can set aside any injunction, or beat him at any suit at law. McCormick says, "papers are being prepared for the purpose." For what purpose? Perhaps he might have said for the purpose of a renewal of his patent; he may again fail in that.

He says, "suit will be also brought at law, but that he shall not
[468] push that." Very likely he will not push the matter, and it is believed he dare not begin.

He says, "they will be prevented from sending the reapers forward to purchasers." A great many things "may be stated," by those who do not care what they say in making sales. Do they find themselves so hard pushed, in making sales, that they are obliged to resort to such stories? Seymour & Morgan's reapers will be sent to purchasers, who will be protected in the right to use the same. Does Mr. McCormick say, "Seymour and Morgan's reaper is really much inferior to ours?" He is certainly a very impartial judge. Mr.
[469] McCormick never was east, where Seymour & Morgan's reapers *was* in use in the harvest field, and, therefore, never saw ours at work, and must be hard pushed to make such statement. The public are referred to the statement of disinterested farmers who have used both reapers, all of whom agree that Seymour & Morgan's reaper is superior to McCormick's. McCormick & Co.'s "fears," that the farmers will be taken in, is very kind on their part, and it is to be hoped may be sincere; but [it] is barely possible that self-in-
[470] terest may have a very little influence in the matter. I am very happy to be able to remove a very great load from their minds, by assuring them that Seymour and Morgan's reaper shall be a first-rate machine, fully equal, and probably superior, to any which they are making. Yours, &c.,

S. G. WILLIAMS.

(*N.*)

Levi Alden, being by me carefully examined, and cautioned, and sworn to testify the whole truth, and nothing but the truth, saith:

"I am one of the editors and proprietors of the "Janesville Gazette," a newspaper printed and published in the town of Janes-
[471] ville, in the County of Rock, and State of Wisconsin. About the 8th day of February, A. D. 1850, the advertisement hereto annexed, and marked "A," was inserted in said paper at the request of S. G. Williams, as the agent of Seymour & Morgan, and was so published for at least two months, and the advertisement hereto annexed, and marked "B," was inserted in said paper on or about the 26th day of March, A. D. 1850, and published in the same for at least four weeks, and was also inserted at the request of S. G.
[472] Williams, as the agent of Seymour & Morgan, and further saith not.

LEVI ALDEN.

(*O.*)

Harvey A. Blakesley, having been by me carefully examined and cautioned and sworn, in due form of law, to testify the whole truth, deposeth, maketh oath, and saith: I have been in the employment of C. H. McCormick & Co., at the City of Chicago, in the State, since the 8th day of November last, at a salary of one thousand dollars per annum, in the capacity of accountant or book-keeper, at their manufactory of McCormick's Patent Virginia Reapers. Cyrus H. McCor-
[473] mick is one of the firm in whose employ I am and have been. At the above establishment they have manufactured, between the harvest of eighteen hundred and forty-nine and eighteen hundred and fifty, sixteen hundred reapers of the above-named patent, most of which have been sold in the States of Illinois, Wisconsin, Iowa, Missouri, and Indiana; as near as I can judge from the orders given for the reapers, and the returns and accounts of the agents, there have been sold at least twelve hundred for the past season. From the prices for which said reapers have been sold, and the cost of manu-
[474] facture of the same, including a patent fee of thirty dollars on each machine, the profit on each reaper would amount to seventy-four dollars; that is, forty-four dollars profit to the manufacturers, and the patent fee of thirty dollars to Mr. McCormick, the patentee. I arrive at the above estimate thus: The cost of the manufacture of the reapers is thirty-six dollars each; their average prices sold for is one hundred and ten dollars each; after paying charges and commissions of agents, making no deductions for losses in collection, which, from past experience, I should not estimate over two and
[475] a half per cent. The establishment used by said C. H. McCormick & Co., in the manufacture of said reapers, is owned by Cyrus H. McCormick, the patentee of said reapers and the plaintiff in said suit, and is worth, as near as I can judge, about forty thousand dollars, including the real estate, buildings, fixtures, and machinery. The capital used by said C. H. McCormick & Co., in carrying on their business is about fifty-five or sixty thousand dol-

lars per annum. I have examined the specifications mentioned in the letters patent granted to Cyrus H. McCormick, dated June 21st,
[476] 1834, for his "improvements in the machine for reaping all kinds of small grain." Also the letters patent, with specifications of the same, granted to said Cyrus H. McCormick for "certain new and useful improvements upon my (his) patented reaping machine," bearing date January 31st, 1845, together with the fourth claim made in the same. And also letters patent, with specifications of the same, granted to said Cyrus H. McCormick for "new and useful improvements in the reaping machine formerly patented by me," (him,) together with the last claim contained in said letters
[477] patent, dated October 23d, 1847; and I have carefully compared the above letters patent, and the specifications accompanying them, with the reaping machines manufactured as aforesaid at the establishment of C. H. McCormick & Co., in said City of Chicago, and I have found that said reaping machines correspond with said letters patent, and the several specifications, as modified from time to time, and particularly they are according to and identical with the description contained in said fourth claim in said letters
[478] patent of January 31st, 1845, and in the last claim in said letters patent of October 23d, 1847. I know that the machines of said C. H. McCormick & Co. were extensively used in the Northwestern States during the harvests of the years 1849 and 1850. Their sales during those two seasons amounted to at least twenty-six hundred reapers. As to previous years' sales, I know nothing except from general report.

HARVEY A. BLAKESLEY.

(*P.*)

Orloff M. Dorman appeared before me at my chambers, in the City
[479] of Chicago aforesaid, on the 27th day of September, in the year of our Lord one thousand eight hundred and fifty. And the said Orloff M. Dorman having been by me carefully examined, and cautioned and sworn, in due form of law, to testify the whole truth and nothing but the truth, deposeth, maketh oath, and saith: I know Cyrus H. McCormick, of Rockbridge County, State of Virginia, the plaintiff in the above entitled suit. I was a member of the firm of C. H. McCormick & Co., which company was composed of the said Cyrus H. McCormick and myself; the partnership between
[480] us commenced on the 26th day of September, A. D. 1849, and was to continue one year from that date, when the partnership expired, except so far as its continuance was necessary to close up the last year's business; I have no interest in the business of the present year. By our partnership the said Cyrus H. McCormick was to have three-fourths of the profits of the business, and I was to have one-fourth of such profits. Said C. H. McCormick &

Co., were engaged in the manufacture of McCormick's Patent Vir-
[481] ginia reapers or reaping machines, at Chicago, in the State of Illinois. Said company made, for the harvest of one thousand eight hundred and fifty, sixteen hundred of said reaping machines for sale. Having just returned from the east, and not having examined all the returns of sales, I cannot state the precise number of said reaping machines which we have sold; I believe the number sold to be about twelve hundred. In the present state of the business it is impossible for me to state with exactness the actual profits arising from the manufacture of the said reaping machines; several
[482] weeks' absence has prevented my making a careful examination of all the accounts; I think the cost of the reaping machines made by the company, including rent for the establishment used by them, will not vary much from thirty-seven dollars each machine. The price for which we sold the machines in the States of Illinois, Wisconsin, Iowa, and Kentucky, and most of Indiana, was one hundred and twenty dollars; thirty dollars cash, and ninety dollars payable the first of December following; or for one hundred and fifteen dollars cash on delivery of the machine; the purchasers in all
[483] these cases paying freight or transportation from the factory. In the State of Illinois we paid some of our agents five dollars each machine for selling it, and collecting the amount therefor. Other agents, and this is the largest class, we pay six dollars each machine for doing the same business. One agent we pay seven dollars each machine for doing the same thing; and in one instance in this State, we pay eight dollars for each machine, for selling it and collecting the amount due for it. In Iowa, we paid our agents for selling and collecting the amount, six dollars each machine. In Wis-
[484] consin, where we expceted the greatest opposition from the agents of said Seymour and Morgan, we paid our agent nine dollars each machine for selling and collecting; the year before the same agent was paid for the same services only six dollars a machine. In the States of Ohio and Missouri, where Mr. McCormick was desirous of bringing his reapers into use, we sold the machines at one hundred and twenty-five dollars each, we paying the transportation on the machines; and we also paid our agents for selling and collecting more than in the State of Illinois. We sold our reapers, delivera-
[485] ble at our cost along the line of the Erie Canal, in the State of New York, for one hundred and ten dollars each machine; and we paid our agent, for selling and collecting, ten per cent. on all sums collected by him for reapers sold; the freight to Buffalo paid by us, where the machines were shipped direct, varied from one $\frac{75}{100}$ to two dollars each reaper.

Some of the reapers made by C. H. McCormick & Co., were sold in Virginia, Maryland, Delaware, Pennsylvania, and New Jersey.
[486] As will be seen from the above statement, the profits realized from the sale of our reaping machines depend very much on

the State or place to which they were sent and sold. Nearly all the sales, it is believed more than three quarters of them, were made in the States of Illinois, Wisconsin, Iowa, and Missouri. In the three States first named, I believe the net profits, in our ordinary sales, will exceed the sum of seventy dollars each machine. In this estimate is not included the losses by bad debts and like causes. For the years preceding the formation of our partnership, the losses on business
[487] done at Chicago, will be exceeding small for the extent of the business; though in the present stage of the company's business it is impossible to make an estimate of such losses with any pretence to accuracy. I believe from the business of former years they will be very small. I believe the net profits on the sales of machines in Wisconsin will be somewhere between sixty-five and seventy-five dollars each machine. In the Northwestern States, including Missouri and Kentucky, the company pay the said Cyrus H. McCormick, the patentee, a patent fee of thirty dollars each machine;
[488] the remainder is the manufacturing profit of C. H. McCormick & Co.

On the sales made in the State of New York, I believe the profits, exclusive of the losses from bad debts, &c., which cannot be great, will be from fifty-five to sixty dollars each machine, out of which the company pay the patentee a patent fee of twenty-five dollars each machine. On all the reaping machines sold by said C. H. McCormick and Co., in all the States above named, I believe the net profits,
[489] exclusive of some small losses from bad debts and like causes, impossible now accurately to estimate, will exceed sixty dollars each machine.

The establishment occupied by said C. H. McCormick and Co., in the manufacture of said reaping machines, is owned by the said Cyrus H. McCormick, the plaintiff, to whom for said premises the Company pays a rent of five thousand dollars per annum. I think the real estate, buildings, and machinery thus rented, would be worth from thirty-five to forty thousand dollars. The capital employed by C. H. McCormick & Co., in the manufacture of said reaping machines during the last year, including all the materials used, has been be-
[490] tween fifty and sixty thousand dollars. Some of those materials having been purchased on credit, the actual cash put into the business by us has been less than that sum. I have examined a copy, certified by Thomas Ewbank, Commissioner of Patents, under the seal of the Patent Office, of the specifications and claim of said Cyrus H. McCormick, in letters patent for "his improvement in the machine for reaping all kinds of small grain,"
[491] granted him the 21st day of June, A. D. 1834. I have also examined a copy, certified in the same manner, of the letters patent, together with the specifications and claim for certain "new and useful improvements on his patented reaping machine," granted to said Cyrus H. McCormick, the 31st day of January, A. D. 1845.

I have also examined a copy, certified in the same manner, of letters patent; together with the specifications and claim for "new and useful improvements in the reaping machine formerly patented by" him, granted to said Cyrus H. McCormick, the 23d day of October, A. D.
[492] 1847; and I have carefully compared the specifications in the letters patent above named, with the reaping machines made by C. H. McCormick & Co., at their factory in Chicago aforesaid, the last year; and I have found that said reaping machines generally correspond with those specifications, though not in conformity to all of them. But the reaping machines manufactured by C. H. McCormick & Co. the last year at their establishment at Chicago aforesaid, do correspond and conform to the fourth claim in said letters patent granted to said Cyrus H. McCormick, the 31st
[493] day of January, A. D. 1845; and said reaping machines do in all respects conform and are exactly identical with the last claim contained in the letters patent, granted said Cyrus H. McCormick, the twenty-third day of October, A. D. 1847. I have seen the reaping machine manufactured by said Cyrus H. McCormick, in connection with Messrs. Ogden and Jones, under the firm name of McCormick, Ogden & Co., for the harvest of 1849, and as to his said fourth claim contained in the letters patent above de-
[494] scribed, as granted him the 31st day of January, A.D. 1845, and as to his last claim contained in the letters patent above described, as granted him the 23d day of October, 1847, the said reaping machines made by said Cyrus H. McCormick, in connection with Messrs. Ogden and Jones, for the harvest of 1849, are identical and in all respects the same as those made as above described by said C. H. McCormick & Co. the last year, and the reaping machines for 1849 and those for 1850 scarcely differed except as to shape and
[495] position of the fingers. And the said Cyrus H. McCormick, in connection with said Ogden and Jones, made about fifteen hundred of said Cyrus H. McCormick's reaping machines, during the year previous to the one in which I was associated with him as above stated; and of those fifteen hundred reaping machines they sold about fourteen hundred in the year 1849. The reaping machines of said Cyrus H. McCormick have been very extensively used for several years. In single counties in this State and in Wisconsin, from one to two hundred of them are used with very great satisfaction.

O. M. DORMAN.

(2.)

[496] William S. McCormick, being carefully examined and cautioned, and duly sworn to testify the truth, the whole truth, and nothing but the truth, saith as follows: I reside in Chicago; am about 39 years of age. I am now, and have been since the fall of 1849, been engaged in superintending the manufacturing of reap-

ing machines of the plaintiff in the City of Chicago; before that time, I was a farmer in Rockbridge, Virginia, and upon my father's farm, which I managed, were made all the early experiments of the plain-
[497] tiff, my brother, on reaping machines. I know that he experimented a great deal on reaping machines, year after year, from the date of his first reaper patent in 1834, down to the harvest of 1845, and at great loss of time and money while engaged in other business, only the successive harvests affording opportunity of making their experiments. I believe the reverse cut cycle, was among the plaintiff's first experiments, having at different times prior to adopting the reverse cycle edge and angled fingers, used the cycle reversed, and also cut one way with straight fingers, and also with
[498] the cycle teeth angled one way in combination with a vibrating plate, having teeth at an opposite angle, the cycle and plate being operated by a double crank. I believe also, among other experiments, the plaintiff used the cycle with teeth used at right angles; the angled finger, as patented in 1845, was used to my knowledge certainly as early as 1840, and I think in 1839, and were first made of wood with a support, an angle below as well as above the
[499] cycle. I wish to refer to a section of a reaping machine, marked "Exhibit A," which I call No. 1. It represents the dividing apparatus, as used prior to about 1844, and wooden bearers as supports to the cycles, as one of the experiments of the plaintiff prior to the invention of curved bearers, and a continuous blade case or support to the cycle, and also the manner of supporting the reel, prior to the improved principle of setting back the support to the reel. I now wish to refer to another machine, marked Exhibit B,
[500] which I call No. 2, being the same machine referred to by Thomas B. Vail, in his answer to the 13th interrogatory of the testimony taken in this cause at Chicago, the 14th June, 1851, except that now some parts of it are lost in having it returned from the place of holding Court in New York to Chicago; the lost parts are made new, and are just the same in principle as those that were lost, and as near the same pattern as possible. There is a raker's seat now on it, which was not probably not on it when Mr. Vail's
[501] testimony was taken; this old machine shows the dividing apparatus and support to the reel as patented in 1845, also the angled fingers and curved bearers patented in 1845, also a raker's seat, which was attempted to be used about 1845, but which in practice proved to be wholly worthless, and was abandoned; as a farmer I used the reaper without a seat, before a good one was invented, and am perfectly certain it was so nearly worthless, that a machine
[502] without one could not be sold at any price that would pay, in competition with one having a raker's seat: this is my experience from my intimate connection with the business for many years. Orloff M. Dorman was a partner of the plaintiff in 1850, on a contract for one year to pay a patent fee of about thirty dollars

on each machine sold. In conversations with Mr. Dorman he frequently manifested to me a desire to continue his connection with the business. (This part of the deposition objected to.) While the plaintiff in the course of the year decided not to have any partner,
[503] the plaintiff purchased the entire right of said Dorman, which had been unsettled in October, 1853, at a specified sum agreed upon; the plaintiff had left on hand and unsold in 1850, after the harvest, four hundred and eighty-one machines, as nearly as we can tell from the books of the concern in Chicago and various parts of the country, where they had been shipped, and I believe, at least a large proportion of their machines were kept out of market by the representations, efforts, and sales of the defendants in dif-
[504] ferent sections of the country, in selling their machines at such prices as they could get.

Question.—Did or did not the plaintiff in the year 1850 sustain a loss by the competition of the defendants, in the sale of their machines? Did he, or did he not in that year sell a less number of machines in consequence of such competition? State all that you know about this matter, and your means of knowledge, and also what was the extent of plaintiff's loss, if any.

Answer.—As the superintendent of the concern with Mr. Dorman,
[505] who was one of the partners in 1850, I was perfectly familiar with all the correspondence with our agents in different parts of the country, and conducted a good deal of it. They complained to us in their correspondence more or less of the interference of the defendants in various ways to sell their machines, and to that extent preventing the sale of plaintiff's machines, by their advertisements, travelling agents, handbills, and misrepresentations, as was stated by the agents of the plaintiff. A considerable number of the defendant's machines were, to my certain knowledge, sent into the
[506] Western country. (The whole answer is objected to by the defendant's attorney.)

W. S. McCORMICK.

Subscribed and sworn to this 12 Oct., 1854, before me,
GEO. W. MEEKER,
U. S. Com.

Cross-examined by defendant's counsel.

Question.—May not the diminished sale of plaintiff's machines in 1850 have been in consequence of the dissatisfaction of the farmers with the plaintiff's machines?

Answer.—That could not have been so, so nearly universal was the satisfaction given by that machine, while the farmers could not know the relative merits of the machine until after purchasing them and trying them.

WM. S. McCORMICK.

[507] Subscribed and sworn to this 12th October, 1854, before me,

GEO. W. MEEKER,
U. S. Com. Dist. Illinois.

(No. 1 and No. 2 stricken out.)

Bell.—(*No.* 3.)

From Loudon's Encyclopædia of Agriculture.

Bell's reaping machine (figs. 376 and 377) is the most recent as well as the most perfect invention of this description. The frame-work of this machine (A A) may be made lighter or stronger, according to circumstances; B B and C C are four wheels upon which
[508] it is mounted, of whatever form it is made. B B have their spokes at right angles to their naves, and are 3½ feet in diameter. For neatness' sake the naves are made of cast iron. The wheels are from 5 to 6 inches broad at the rims, and are surrounded by a slight hoop of iron. Were they made narrower in the rims, when the ground was soft they would both cut it and drag, without giving motion to the connected parts of the machinery. The small wheels (C C) which support the front of the frame are like the
[509] large ones (B B), made of wood; they are fourteen inches in diameter, and six inches broad at the rims, with a very slight hoop of iron round them. Their axles, which are of iron, are screwed to the frame, and are 1¼ inches in diameter. The wheels are placed as near the front of the frame as possible, the reason for which will appear when the general description of the machine is given.

The wheels (B B) are connected with the main axle (D) in such a manner as that they may turn upon it similarly to a carriage wheel,
[510] without moving the axle with them, or they can be fixed to it at pleasure, so as to turn it round with them, as occasion requires. For this purpose the holes in the naves are circular, and of course so much of the axle as passes through them is round. There are cross flanges, cast upon the nave, which catch hold of the coupling box E when the machinery is to be moved, and are disengaged from it by the handle F when the machine is going, without moving the machinery. In the engraving this part of the apparatus
[511] is entirely concealed at one of the wheels, except a small portion of the handle at H. The other coupling box is but faintly represented at E. The handle F has a joint in it which is fixed to the other half of it, which passes through the frame of the machine, and terminates with the handle H, so that both coupling boxes can be managed by the driver standing at H, although they are on opposite sides of the frame. The main axle (D) is 3½ feet long between the shoulders, and eight inches from the shoulders to

[512] the coupling box; the frame of the machine is four feet broad by seven feet long. Fixed upon the main axle (D) is the beveled wheel (I), sixty teeth, part of which is seen in the engraving. This beveled wheel moves two pinions of ten teeth each. These pinions are concealed in the plate by the frame of the machine; one of them turns the crank rod (K), and the other gives motion to the coupling wheels (L L) upon the top of the frame. The crank rod (K) being thus put in motion as the machine moves for-
[513] ward, the crank M, which gives motion to the cutters, revolves with a uniform and steady motion. N is a coupling strap of iron which connects the crank (M) and the movable bar (O O) together, which is kept in its place by means of the sliding hooks (P P) working in the brass sockets (Q Q), which are screwed upon the strong iron supports (R R). It is obvious that as the crank (M) revolves it will, by pulling the connecting-rod (N), give a perpetual motion backwards and forwards to the movable bar (O O).
[514] In order that there may be as little friction as possible to the movable bar (O O), there are two friction pulleys fixed to the iron supports (R R), upon which the movable bar (O O) rests. These are not seen in the plate, as they are placed immediately below the bar; but to any person who considers the thing attentively, they must be readily understood. They are of the greatest consequence, as the back parts of the cutters wholly rest upon the movable bar (O O), and form the spring which each cutter must necessarily have; the pressure upon it is very considerable. With respect
[515] to the cutters, it may be here remarked that the greater body of them is made of iron, edged with the best steel, hardened as much as they will bear without breaking out into chips when the machine is in operation. The cutter bar (that is, the bar upon which the cutters are screwed) is strongly screwed upon the extremities of the supports (R R), and is six feet long by three inches broad, and three-fourths of an inch thick. The lower or fixed cutters (S S S) are made triangular, of solid iron edged with
[516] steel, as before mentioned; they are fifteen inches long from the point to the extremity, four inches broad at the base, and nearly one-fourth of an inch thick; they are steeled only to the front of the bar, thus leaving a steeled edge of about one foot. In the middle of the base of the cutter there is a hole pierced half an inch in diameter, and a corresponding one in the bar where it is to be placed. The hole in the bar is screwed, and in fixing a cutter, a bolt is passed through the hole in the base and screwed tightly
[517] down into the bar. To prevent a cutter from shifting its place, there are other two small holes pierced, one on each side of the half-inch hole in the base, and corresponding ones in the centre of the bar; these holes are one-fourth of an inch in diameter. Into the holes in the bar there are two iron pins firmly riveted below, and left one-eighth of an inch above the bar, made to fit neatly into the

holes in the cutters, although with a sufficiency of looseness to allow
[518] the cutter to be taken easily off when the bolt in the middle is screwed out. By this means, when the bolt in the middle is screwed down, a firm and unalterable position is insured to the under cutter. The upper cutters (U U), &c., &c., like the under ones, are made of good iron, edged with steel as far back as the hole where the bolts upon which they turn pass through. They are three inches broad where the hole is pierced, and behind the cutter bar, as is seen in the plate: They are bent down about two inches, to allow
[519] the rollers and canvas to operate, as shall be afterwards described. After being continued horizontally about three inches, they are again bent up, and their extremities placed above the movable bar. They are made about 13½ inches long from the point to the hole, and about 7½ inches from the hole to the extremity backwards. Both upper and under cutters are sharpened on both sides, similarly to a pair of scissors—the under ones, of course, upon the upper sides, and the upper one upon the lower sides—thus forming,
[520] when the cutters are screwed to their places, a perpetual cutter upon that principle. The bolts upon which the upper or movable cutters work are half-an-inch in diameter, and are screwed to the bar through a hole of corresponding breadth; they are made to go through the bar about half an inch, upon which a nut is screwed, to prevent the bolt from unscrewing, which they would otherwise do, from the moving of the cutters, which would allow the edges of the cutters to separate, and of course the machine would get deranged and would not operate. The points of the under or
[521] fixed cutters are six inches separate; of course the holes in the bar by which they are fixed are six inches apart. The bolts of the upper or movable cutters are intermediate—that is, three inches from the others—so that the cutter bar is bored from end to end with holes half an inch in diameter, and three inches distant. The small holes, with the pins which prevent the fixed cutters from shifting their places, are each 1½ inches from the large holes, so that the bar, before the cutters are screwed upon it, is pierced first with
[522] a small hole, then with a large one, then two small ones, then a large one, then two small ones, &c., as may be understood from the plate, each hole 1½ inches apart. The back parts of the movable cutters, as was already mentioned, rest upon the movable bar, and on each side of every cutter there is an iron pin of one-fourth of an inch in *in* diameter, riveted into the movable bar. By means of these pins, it is easily seen, from the consideration of the plate, that as the movable bar is pushed backwards and forwards by
[523] the crank (M), upon the friction pulleys below it, the movable cutters will have a perpetual motion backwards and forwards. Under the heads of the bolts which fasten the movable cutters, and the cutters themselves, there is placed a washer of brass, to diminish the friction as much as possible, and for the admission of oil there

are two small holes pierced in the head of each bolt. There are twelve movable cutters and thirteen fixed ones, with intervals of six inches between the points of the latter, so that the breadth of the
[524] machine is exactly six feet; but this breadth, from the principle of the machine, may be either increased or diminished, according to the nature of the farm upon which the machine is intended to operate. Upon a perfectly level farm, the machine might be made broader; but upon a farm of sloping or uneven surface, one of six feet in breadth will be found to be work enough for two horses. As it was before stated, the bevel-wheel (I) gives motion to the coupling wheels (L L), of 18 teeth each; these move the horizontal
[525] shaft *v*, and the wheel W, which is fixed to the end of it. The wheel W has 36 teeth, and pinion X, which it turns, and which is fixed upon the gudgeon of the roller Y, has 18 teeth. This part, however, is misrepresented in the drawing, which was taken from a model which had the rollers turned by coupling wheels, as shown in the plate. The one roller (Y), turns the other (Z) by the pitch chains (*a a*), the chief use of which is to keep the sheet of canvas from changing its place by the revolution of the rollers. The
[526] canvas, from its gravity, would slip down upon the rollers as the machine moved forward, and it would twist upon them by the unequal pressure to which it is exposed by the cut corn pressing unequally upon it. To prevent these derangements, there are loops fixed to the canvas, which are made fast to the links of the chain, about six inches apart; and there being an equal number of links in both the upper and lower chains, and an equal number of teeth in the four pulleys upon which they work, the canvas revolves
[527] uniformly, without being in the least deranged by the many casualties to which it is exposed. *b* is the pole to which the horses are yoked; it is made of wood, and is firmly fixed to the cross rails upon the top of the frame; its length is ten feet from its extremity to the frame of the machine. *c c* are the swingletrees by which the horses are yoked; they are yoked similarly to horses in a carriage, so as both to draw forward or push backward at pleasure. Their heads, of course, are towards the machine, and in ap-
[528] pearance they push the machine before them; but in reality they are drawing, the same as in the plow. *d* is a small rod of wood, or helm, which the driver holds in his right hand, by the pulling of which to him, or the pushing of it from him, he conducts the machine straight forward. The dotted lines in the plate are a continuation of the pole, with the swingletrees and helm attached. The machine is turned at the end of the ridge by the following contrivance: The two wheels (*e e*) in the body of the machine are joined
[529] to the lever by an upright movable axle; these wheels are similar to the two (*c c*) on the front of the frame; they have a strong iron axle, which is made so long as to let the wheels conveniently turn between the crank rod (K), and the frame of the

machine. In order that this piece of the apparatus may be used with advantage, the beveled wheel (I) is not placed upon the middle of the main axle (D), but about one foot from the end of it, as is seen in the engraving. This throws crank-rod (K) nearer the side of
[530] the machine, thus leaving plenty of space for the turning apparatus. In the middle of the horizontal axle of the wheels (*e e*), there is an upright standard of iron, sufficiently strong, and firmly joined to the horizontal axle. This upright standard or axle passes through the middle of the lever *f* (which is of wood, and at this part about five inches square), about 20 inches from the end of it. Upon the top of this upright standard there is placed a segment of a wheel (*i*), with the teeth on the lower side, which is worked by
[531] a small pinion of six teeth upon the end of the rod (*g*). This pinion is not seen in the engraving, as it is completely concealed by the segment (*i*). The rod (*g*) and the small pinion upon it, are turned round by the handle *h*; the pinion moves the segment *i*, which, being firmly fixed to the upright standard, turns the small wheels *e e* either way. When the machine is cutting, the wheels *e e* are put parallel to the cutters, and in this position they assist the machine in passing a furrow, without allowing the cutters to come in
[532] contact with the opposite side of it. But when the machine is to be turned round, they are turned, with an angle to the path of the machine, by the handle *h*; and the rod *g* being fixed in that position by a screw near the handle, the lever is then pressed down, and fixed with a catch to the frame of the machine. In pressing down the lever *f*, the small wheels *e e*, which before were about two inches from the ground, are pressed to the earth about two or three inches below the usual level of the machine. Of course,
[533] the two front wheels (*c c*) are lifted two or three inches from the ground, and the cutters considerably more, thus insuring them from accident while turning round. The machine now rests upon the two large wheels (B B), and the two small ones *e e* of the lever; and the two front wheels (*c c*) go for nothing, as they do not touch the ground. But the axle of the small wheels *e e*, being placed with an angle to the main axle (D) of the large wheels B B, the machine will naturally turn round upon the horses being moved
[534] slowly forward; of course, the greater the angle formed by the two axles, the less space will the machine require to turn upon. In turning the machine, however, attention must always be given to disengage the large wheels B B from the main axle (D); this is done by shifting the coupling boxes E E by means of the handles H H. The apparatus *l l*, or collector, is placed exactly above the cutters; it is 2½ feet in diameter, made of wood as light as may be. The supporters *k k* in the original machine were made
[535] of iron; but now the two side beams of the machine are made of a piece of wood, with a natural cast upon it, similar to the beam of a plough, but rising with a much greater angle, as

near the form of the iron supports in the plate as possible, and continued horizontally till their points are exactly above the movable bar *o o*. The points *p p* are made of iron, blunt, as in the plate, to allow the collector (*l l*) to turn round. At *q q q q* are strong iron
[536] screws, working in nuts placed in the wooden part of the supports, which serve the double purpose of uniting the iron part to the wood, and allowing it to be drawn forward or pushed backward, as occasion may be, by either shifting to another hole, or, which is better, by long slips in the middle of the bar. Long corn requires the collector to be placed forward, and short corn requires it to be taken back. At *o o* are two perpendicular rods, which slip in the holes in the points of the supports, by the moving of which
[537] upwards or downwards, the collector (*l l*), which turns in sockets in the lower ends of these rods, is lowered or heightened, according to the length of the corn to be cut; the rods are fixed in their places by screws in the end of the supports. The collector is turned by a cross belt or chain passing over the two pulleys *m n*. A piece of slight canvas is put around the rollers (Y Z) fixed to the chain *a a*, as before described. The lower ends of the rollers have a shield of plate iron round their gudgeons, to prevent the cut
[538] corn from warping, which it does effectually. The bushes of the roller *z* are made to shift by screws to tighten the chains a little, to prevent them from slipping the pulleys, as they lengthen a little by using, especially when new.

Fig. 376 is a representation of the machine in full operation; about six or eight yards of the field require to be cut at the ends to allow the machine to turn without injuring the corn, which may be done by the machine itself. If the corn is standing nearly upright,
[539] a convenient number of ridges may be taken in and cut by going round them; but if the corn is standing, and the field free from deep furrows, it may be cut by going round and round it, till it is finished in the middle. One man, as seen in the plate, is sufficient to manage the whole operation. The cutting, collecting, and laying are the three principal parts of this machine; which have been all more or less explained in the general description given above. But as they are particular, a few words on each of these heads may
[540] still be necessary, that the machine may be completely understood in all its bearings.

First. Then with regard to the cutting it is desirable that the machine should do her work, and nothing more. If the motion of the cutters were too slow she would not clear the ground, and if it were too quick there would be a useless expenditure of power and machinery. Let it be remembered, that the large outer wheels B B are 3½ feet in diameter; that the beveled wheel has sixty teeth; and that the crank rod pinion has ten; and that the cutters
[541] have twelve inches of a cutting edge. The diameter of the wheels B B being 3½ feet or 42 inches, their circumferences

are 131.94.678 inches. Every revolution of them will pass over nearly 132 inches of the ground's surface; but there being 10 teeth in the crank rod pinion, and 60 in the beveled wheel I, every revolution of the wheels B B will turn the crank pinion 6 times, and of course the crank as often. But every turn of the crank pinion gives
[542] two cuts, and each stroke of the cutters clears 12 inches of the ground, because they have twelve inches of a cutting edge; therefore, one revolution of the wheels B B gives 12 strokes of the cutters, and clears 12 times 12, or 144 inches of the surface of the ground. But one revolution of B B passes only over 132 inches of surface, therefore the cutters are calculated to cut in one revolution of B B 12 inches more than enough, that is, one inch each stroke. This, however, is perhaps nothing more than is advisable to
[543] calculate upon, making allowances for the operation of the machinery, the partial dragging of the wheels, &c., &c.

Secondly. The collector (*l l*) must not move too slowly, lest it should retard the corn from falling upon the canvas, and it must not move too quickly, lest it should shake ripe grain. As before stated, it is 2½ feet in diameter, that is, 94.2477 inches in circumference. But one revolution of B B passes over 132 inches of surface, therefore, that
[544] the collector (*l l*) may just touch the corn, without bringing it back or retarding it from naturally falling back, it must make 1.4 revolution for every one that B B makes. Since there are six arms in (*l l*,) every arm will touch the standing corn at equal distances of 15.'7 inches. The pulley *m* makes six revolutions for one that B B makes; it is six inches in diameter, and the pulley *n*, upon the axle of *l l*, is nine inches; therefore *m* revolves 1.5 times for once that *n* turns round, and the collector (*l l*) revolves 4 times for
[545] once that the large wheels B B revolve. But 4 × 94.2477 =376.99 inches, the space passed through by the circumference of the collector, while the machine moves forward only 132; the difference of which is 244.99, the space that the collector passes over more than the machine during one revolution of B B. Therefore, every inch of the corn is brought back 1.54 inch nearly by the collector, which is sufficient to insure its falling backwards upon the
[546] canvas; and yet it touches the corn so gently, that it is impossible that it can injure it in the smallest degree. A quicker and a slower motion, however, is advisable; which is easily given, by having two or three sheaves upon the pulleys *m* and *n*, and then by shifting the belt a different motion is produced. With regard to the canvas it is necessary that it should revolve as much as the ground passed over by the machine; that is, while the wheels B B make one revolution, or pass over 132 inches of the surface,
[547] 132 inches at least of canvas should pass over the rollers. W, as before stated, has 36 teeth, and × 18, so that the roller V will give two revolutions for one of *w*. But *w* revolves six times for one revolution of the wheels B B, hence the roller Y

will revolve 12 times for every revolution of B B. The diameter of the rollers is 4 inches, their circumferences therefore are nearly 12.'56 inches, 12 revolutions of which will give 150.72 inches. As
[548] before stated, one revolution of B B gives only 132 inches, wherefore there is a preponderance of motion on the side of the canvas of 18.72 inches for every revolution of B B. This velocity is necessary to insure the canvas of clearing itself in all cases, and with a smart velocity the cut corn is laid down with a greater angle to the path of the machine. It may here be observed, that it is often found convenient to have the canvas to lay down the corn on either side of the machine, according to the direction from
[549] which the wind is blowing. This may be done with a double wheel at X, with a handle, in the usual method employed for reversing the motion of the rollers of the threshing machine. It were desirable too, if possible, to have the canvas besmeared with a drying oil or gum, or some other substance which would prevent it from contracting with moisture, as the slightest shower or dew of a morning contracts it so much as to render the implement useless until the corn is perfectly dry.

An estimate of the probable value of Bell's reaping machine, may
[550] be formed from the reports signed by numerous practical farmers, who were spectators to different trials made in 1828 and 1829. In September, 1828, the machine was tried at Pawrie in the County of Farfar, before between forty and fifty landed proprietors and practical agriculturists, who signed a declaration, stating, "that the machine cut down a breadth of five feet at once, was moved by a single horse, and attended by from six to eight persons to tie up the corn; and that the field was reaped by this force at the
[551] rate of an imperial acre per hour (Gard. Mag. Vol. V. p. 600). In September, 1829, the machine was tried at Manckie in Farfarshire, in the presence of a still greater number of persons, who attest that it cut in half an hour near half an English acre of a very heavy crop of oats, which were lodged, thrown about by the wind, and exceedingly difficult to harvest. It was tried in a number of other places in Farfarshire, Perthshire, and Fifeshire, and the general conviction appears to be, that it will soon come into as general use
[552] among the farmers as the threshing machine (Gard. Mag. Vol. VI.) The price is at present between £30 and £35, but if it were once in general use, probably the cost might be lowered; but even that price would be saved out of the usual sum paid for manual labor during only one harvest, by an extensive farmer. Few men deserve better of his country, and, indeed, of every civilized country where agriculture is practised, than Mr. Bell; for, surely, that invention must ultimately be of great benefit to men and women,
[553] which enables them to do by horses, oxen or steam, that which they have hitherto done by a most severe description

of manual labor, rendered doubly oppressive by the season of the year in which it must necessarily be performed.

(*No.* 4.)

William Schnebley, being about the age of fifty-three years, and having been by me first cautioned and sworn to testify the truth, the whole truth, and nothing but the truth, in the matter of controversy aforesaid. I did carefully examine the said William Schnebly, and he did thereupon depose, testify, and say as follows, viz.:

[554] 1st Question. State your residence, and the distance of your residence from Albany, N. York, and your occupation?

A. I reside in Habensack, New Jersey, about 150 miles from Albany. I am a mechanic and inventor of machines.

2. Q. Did you at any time, and when, invent and construct a machine for reaping grain?

A. About the year 1825, I first invented and constructed a model for a machine for reaping grain, and then constructed a machine after that model, and put it into practical operation for reaping grain.

[555] 3. Q. How many of such machines did you then construct and put into actual operation, and how extensively are they used?

A. I built three or four machines as experimental machines, and put them into actual operation. The first machine I took into the field had a reel of the ordinary shape, with arms and cross beaters. Grain was cut with each one of these machines at different times in the presence of different persons.

4. Q. Describe the reel you first used, and the mode of attaching and supporting it on the machine?

A. The first reel was composed of a shaft with arms and cross

[556] beaters as reels are commonly made. It is the same in substance with the reel used in the plaintiff's reaping machine. The reel was supported by two uprights, one on each side of the frame. Standing beyond the cutter with two braces supporting the uprights, which braces ran from the front of the frame upwards to the uprights.

5. Q. On this machine with the reel attached, which you have described, was there a seat for a raker? If so describe its position.

A. There was such a seat immediately behind the guard-board and

[557] in the rear of the platform, between the dividing wheels and a little forward of the axle.

6. Q. Was that seat actually occupied by a person raking the grain? and if so, what kind of a rake was used? Describe the mode of the raker's sitting on the machine, and how the grain was thrown off?

A. I occupied the seat myself; I sat astride of the seat with my

feet on a portion of the frame below, my face in front; I used a three pronged rake, by an effort of my arms. I threw the grain off to the left side immediately behind the horses.

[558] 7. Q. Did you so use the rake, while the reel was attached as described, and while it was in operation?

A. To the best of my knowledge I did; that is my recollection of the matter.

8. Q. Was there any difficulty in raking off the grain as you have described, on account of the reel being in the way?

A. None.

9. Q. State whether on this machine you used a driver; and if so, for what purpose, and describe its construction?

(Objected to as leading.)

[559] A. I used a divider on this machine for the purpose of separating the standing grain from the grain that was cut. It consisted of a part of a frame projecting forward beyond the cutters. The brace that was used to support the uprights, being sharpened on the upper edge, and an additional piece screwed to the frame to widen the frame itself, thereby receiving the standing grain clear of the machine. I have described it as fully as I can, and I found that it answered the intended purpose.

10. Q. At any time, and when did you first make application for a patent for a reaping machine?

[560] A. The first time I attempted to secure a patent, was about the year 1825, when Dr. Thomas P. Jones was in the Patent Office.

11. Q. State whether at that time you took a model of the machine you have described to Washington?

A. I did not.

12. Q. When did you first take a model of a reaping machine to Washington?

A. In 1825 or thereabouts, I took this model to Washington, and to the Patent Office, supposing that that would be my security. Dr.

[561] Jones sent me back again, and said that that would not be my security, and that I must take out a patent as it was a very important invention.

13. Q. Describe the machine according to this model?

A. This machine was similar to the one which I afterwards built, and which I have described, with the exception of the reel, which was different in its construction. I believe on reflection the reel was just like the other one described, with arms and beaters; the other parts were similar. In the first machine which I put into the field, the

[562] horse was placed behind the machine, and propelled the machine forward.

14. Q. Did you afterwards, and if so, when, obtain a patent for a reaping machine?

A. I did obtain such a patent, issued in August, 1853, issued to my brother Thomas and myself.

15. Q. State whether or not prior to the time of issuing of the patent, you had seen or heard of any other reaping machine, except those which you had yourself constructed?

A. I think I heard of a machine. I do not recollect whether I saw it or not.

[563] 16. Q. In this machine for which a patent was issued, how was the grain got off the machine, and how deposited?

Objected to, as the patent itself will best show how this is done, and unless the patent is produced.

A. The grain was thrown off on one occasion by an endless apron. On another occasion, I sat on the machine and attempted to rake it off, the same as I did on the first machine. It was deposited on the side, the same as I have described above in bundles, in gavels: I call it grits ready for binding.

[564] 17. Q. State whether or not after the issuing of the patent, the machine was put in practical operation, and how extensively, and whether worked well, and in what harvest, the harvest of what year?

Objected to as leading.

A. My impressions are that some of the experiments, I do not remember whether the experiments were before or after the issuing of the patent, I cannot tell the year, but believe that the machine was put in operation after the patent was issued, before a large concourse [565] of people. It might have been in the year 1833, or the year after. The machine worked well for a little while, but some part gave way and the operation ceased. The crank broke, I think, but I am not certain. The machine performed well, and deposited the grain until it broke.

18. Q. (Exhibit produced and marked "A," and shown to witness.) Please state what this exhibit represents?

A. This exhibit represents one of my machines, one of the last spoken of, and which was used as I have stated. I made this diagram myself.

[566] 19. Q. Describe the mode of attaching the horses to the machine last spoken of, and which was used?

A. A pair of shafts were attached on the side of the machine, and one horse was placed on the inside of the shaft and one on the outside. The horses were on the side of the machine alongside the cutter, so that the tail of the horse fell in a line with the cutter. They were placed on the left side of the machine, walking in the swath that was cut.

20. Q. In this machine, used after the issuing of the patent, was [567] the reel the same as in the patent described, and if different, in what respects?

A. On one occasion the reel was the same as described in the patent, on another occasion the reel was different; according to the best of my recollection, the reel last mentioned was like the one I have described in the early part of my examination.

21. Q. (Exhibit "A" shown to witness.) What does the black spot on the upper diagram represent, numbered 1, represent?

A. A represents the seat of the raker.

22. Q. How long did you continue the manufacture of these reapers?

[568] A. I was manufacturing them, and making experiments for several years. I do not recollect how long.

23. Q. Did you discontinue their manufacture? If so, state the reason why.

A. I discontinued the manufacture for the want of capital. There was no other reason. It was not because there was any defect in the principle of the machine, nor in the practical operation of the machine.

24. Q. State whether or not the models before spoken of, or either of them, were seen by a large number of individuals, and if so, by how many, and where?

[569] A. The first model I took to Washington, was there seen by a large number of persons. It was seen at every place where I stopped, coming from Washington to Hagerstown, in Maryland, seventy miles from Washington, by large numbers. It had been seen before in Hagerstown by large numbers. Various other model embracing the same features with this first model, were seen by large numbers.

25. Q. Did you use any other kind of divider than the one described in any of your experiments?

A. I did not.

26. Q. Did you use any mode in any of these experiments of

[570] turning the grain to be cut insi ard to the cutters, and if so, describe it?

A. The same dividers were so constructed as to produce that result. By making the divider wide enough, it inclined the grain next to the standing grain believed to be *be* cut inwards to the cutter. My frame was four or five or six inches inside, reduced to a point, making an angle of inclination.

27. Q. Describe the board attached upon the outside to separate the standing grain as to shape and all other particulars?

[571] A. This board was made four or five inches wide behind, and reduced to a point, and all attached to the frame in front of the cutter or alongside of it, the point of the board coming up to the point of the frame, so as to form a continuous line from the point of the frame to the heel of the board.

28. Q. What has been your occupation from the time of your experiments with these machines, until the present time?

A. Constructing various machines, printing presses, steam engines, weighing machines, reaping and mowing machines and others.

29. Q. Have you read plaintiff's specifications in his patents for

[572] reaping machines, and are you acquainted with his machines, and have you examined the models of his machines?

A. I have read some of his specifications and claims, particularly the one in which a seat for the raker is claimed. I have examined the machine made after that specification and claim.

30. Q. In your judgment, would it require invention to put a seat for the raker in the place where it is put upon McCormick's machine?

A. I think not; it seems to be the most suitable place for a seat in
[573] his arrangement, necessarily suggesting the idea that *that* was where it ought to be.

31. Q. How many arms had the reel used by you?

A. The first I think had only two arms and two beaters, one on each side of the shaft; some of the rest of the machines had four arms and four beaters.

32. Q. Was the inward divider so constructed that the end of the reel swept over it when in operation?

A. It was.

Being cross-examined by Charles M. Keller of counsel for plaintiff.

[574] 1. Q. Were you examined in the trial between these parties at Albany, in the fall of 1851?

A. I believe I was about that time.

2. Q. Did you before that time give your deposition, to be used on the defendants' part in that suit, on that trial?

A. I do not recollect that I did, if I did, it has escaped my recollection.

3. Q. At the time you testified in the trial at Albany, did you not testify that the seat was used without the reel?

A. I do not recollect to what I testified on that occasion. It is pos-
[575] sible that I did. As the machine was used with and without the reel, on different occasions.

4. Did you not then testify, that the seat was introduced by you, or tried by you, after you had abandoned the reel?

A. It is possible that I did testify to that effect at that time, but I have subsequently had brought to my recollection, that the reel was used whilst I occupied the seat.

5. Q. Who brought it to your recollection?

A. If you will tell me what brings everything to my recollection, I will be able to answer your question.

6. The last question is repeated.

A. I cannot tell you who brought it to my recollection.
[576] I did not think of it at that time. It came to my recollection last night.

7. Is the drawing, Exhibit "A," a correct representation of the machine actually used by you, so far as it goes?

A. It is, with one exception. That black spot, No. 1, was not the seat that I used, but I sat aside of the cross-piece immediately behind

[577] the guard-board, and, if my memory serves me, I sat on the top of the guard-board, on other occasions, with my feet on the platform, facing the grain.

8. What was the length of the machine from the guard-board to the cutters?

A. They differed some four feet and six inches, and others perhaps a little shorter, in that neighborhood.

9. What was the width of the beaters on the reel, in the direction of the circumference?

A. The reel on the machine, of which Exhibit A is a representation, was about five feet and a half in diameter, and the beaters occupied about an equal portion of the circumference with the open spaces.

[578] 10. As to about what time was the machine made, of which Exhibit A is a representation?

A. I cannot tell you the year precisely. It was after the first machine described was made. I believe this was made after the patent was issued.

11. When was the last machine made by you?

A. I can't tell the time. The machine represented in Exhibit A was altered and modified, and used afterwards.

12. Was it the last machine made by you?

A. I believe that was the last machine made by me, at that time.

13. When did you next make another machine?

[579] A. I believe it was in 1847, or thereabouts.

14. How many printing-presses did you construct after 1833?

A. I made half-a-dozen, or so.

15. Are any of them now in operation?

A. There were one or two in operation some time ago. I do not know whether they are now, or not.

16. How many steam-engines did you construct after 1833?

A. Three or four.

17. Any of them in use?

A. No, sir. They were not continued to be manufactured for the want of capital.

[580] 18. What kind of reel did you use, on the machine that discharged the grain by an endless apron?

A. I used the ordinary beaters, and likewise the beaters represented in Exhibit "A."

19. When you abandoned the use of the endless apron, did you then substitute the kind of reel represented in Exhibit "A."

A. No, sir.

20. When did you substitute the reel in Exhibit "A?"

A. When in use with the endless apron, and no other occasion, I think.

21. Does Exhibit "A" represent the machine with the endless apron?

[581] A. The exhibit does not represent the apron.

22. Are you sure that the machine, of which Exhibit "A" is a representation, had the endless apron?

A. I am sure of that.

WILLIAM SCHNEBLEY.

Read to, subscribed and sworn to by William Schnebley, the witness, on his examination before me this 10th day of October, 1854.

CHARLES ELIOT SCOVILLE,
United States Commissioner.

(*No.* 5.)

The United States of America, to all to whom these letters patent shall come:

Whereas, William Schnebley and Thomas Schnebley, citizens of the
[582] United States, hath alleged that they have invented a new and useful improvement in the machine for cutting grain, grass, &c., which improvement *he* states has not been known or used before *his* application, hath made oath that *he* does very believe that *he* is the true inventor or discoverer of the said improvement; hath paid into the treasury of the United States the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that
[583] purpose: These are therefore to grant, according to law, to the said William Schnebley and Thomas Schnebley, their heirs, administrators, or assigns, for the term of fourteen years from the twenty-second day of August, one thousand eight hundred and thirty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement; a description whereof is given in the words of the said William Schnebley and Thomas Schnebley themselves, in the schedule hereto annexed, and is made a part of these presents.

In testimony whereof, I have caused these letters to be made
[584] patent, and the seal of the United States to be hereunto affixed.

Given under my hand, at the City of Washington, this twenty-second day of August, in the year of our Lord one thousand
[L. S.] eight hundred and thirty-three, and of the independence of the United States of America the fifty-eighth.

ANDREW JACKSON.

By the President:

LOUIS MCLANE,
Secretary of State.

CITY OF WASHINGTON, to wit:

I do hereby certify that the foregoing letters patent were delivered to me on the twenty-second day of August, in the year of our Lord
[585] one thousand eight hundred and thirty-three, to be examined; that I have examined the same, and find them conformable to law; and I do hereby return the same to the Secretary of State within fifteen days from the date aforesaid, to wit, on this twenty-second day of August, in the year aforesaid.

R. B. TANEY,
Attorney-General of the United States.

The schedule referred to in these letters patent, and making part of the same, containing a description, in the words of the said William Schnebley and Thomas Schnebley themselves, of their improvement for cutting grain, grass, &c.

[586] To all to whom these presents shall come:

Be it known that we, William Schnebley and Thomas Schnebley, of Hagerstown, in the County of Washington, and State of Maryland, have invented a new and useful improvement in cutting grain, seeds, and grass, and that the following is a full and exact description of the construction and operation of the machine as invented by us, and titled the Reel and Shear Grain Cutter.

This machine is to be made of suitable materials, of the following dimensions:

The frame or ground work to be from ten to twelve feet in length,
[587] and from three to nine feet in breadth, connected together by cross pieces; one, twenty-two inches in rear of the front ends; one, four feet six inches in rear of the first; one, two feet six inches in rear of the second; and one at the extreme end of the frame, from the second to the third; likewise a cross piece, as a head block for the spindles and perpendicular shaft to work upon. The first cross piece to be divided into equal spaces of three or four inches each, every other one of which is to receive a piece tenoned in it,
[588] and to project as far forward as the side pieces; making each twenty-two inches in length, clear of the cross piece which forms the bearing for the shears to rest upon, and the spaces to admit the grain as the machine is propelled by the horse or horses. The space between the first and second cross pieces is to be occupied by the revolving plane or sheet. The space between the second and third cross pieces to be occupied by the wheels which are to carry the machine and give motion to the whole; the space behind the
[589] wheels for purposes as the case may require. Immediately or upon a line with the first cross piece, a perpendicular is to be raised on each side of the frame, from two to four feet in height, of proper strength, with braces to keep them permanent, which are intended to give bearings to the gudgeons of the reel-shaft. In rear

of the space for the revolving plane or sheet, a guard board is to be raised, to give proper direction to the grain, and to be of proper height. In the centre of the space in which the wheels move, two
[590] uprights are to be raised, one on each side of the frame, of proper height, and connected together by a cap or head block, through which the perpendicular shaft is to pass; the upright to be raised to give strength and support to the frame. The shears are to be made of suitable materials, of the following shape and dimensions: The bottom plates are to be made into two blades, running out eighteen inches in length clear of the rivet plate, to which they are connected, and which is to be made of a proper breadth to
[591] suit the cross piece to which they are fastened; the blades that run out are to be set so far apart as to have a space of three or four inches between them, more or less, to suit or correspond with the spaces which are to receive the grain. The inner edges of each blade or bottom plate to be made similar to that of a common pair of shears, and of proper breadth to receive bolt holes, by which they are to be fastened to the projecting pieces, which are to be
[592] brought to a point in front of the plates, for the purpose of dividing the grain and passing the machine into it freely. The top blade, or other part which forms the double shear, is to be made wide enough behind, or at the heel, to project its edges one-eighth of an inch over the edges of the bottom ones, and likewise to be eighteen inches in length, corresponding with the bottom ones, but reduced to a point presenting the shape of a spear, a rivet hole to be made in it, to suit the bottom one, by which they are to be fastened
[593] together, in a manner to suffer them to play backward and forward like a common pair of shears, so that when the one side is shut the other stands open to receive the grain, presenting a shape or face of an acute angle; the edges of the top blades to be made similar to those of a common pair of shears; the handles of all the top blades are to continue back in rear of the cross piece from one to two feet, two of which are to be continued so far back as to pass the perpendicular shaft a proper distance, having their ends
[594] connected together by a cross piece, so as to permit them to play freely when in motion, the arms or handles of each to be made proportionally strong; the shorter ones are likewise to be connected to the larger, so that when motion is given to the larger the whole moves regularly together. The reel is to be made of suitable materials of the following dimensions: To be as wide as the space between the upright upon which it revolves, with four arms tenoned in each end of the shaft, at equal distances apart, each arm
[595] to be from two to four feet in length; at the end of each arm a segment corresponding with the circle which the reel will describe with the arms in it is to be fastened from eighteen to twenty-four inches in curve length from one segment to the opposite one; this is to be put on a suitable piece of board, or otherwise fitting

the curve or arch of each, and likewise on each segment, these forming the reel, which in its shape represents a cylinder or drum, with four open spaces and four surfaces, which may be increased to a
[596] greater number, or reduced to a less, as the case may require; the spaces are to admit the grain into the reel, and the lower edge of the surface to catch it and give it the proper inclination over a roller which is set upon two springs fastened by a screw bolt at each side of the frame and inside of the uprights. The roller is to be made of suitable material and diameter, its length to correspond with the width of the reel, the springs which support it of proper strength to cause it to revolve when its surface comes in con-
[597] tact with the surface of the reel, by which means the grain is to be rolled upon the revolving plane or sheet immediately behind it. The springs are used to cause the space between the surface of the roller and the surface of the reel to increase or diminish as the quantity of grain passing through becomes greater or less.

The revolving plane or sheet is to be made of suitable material, of the following length and breadth; its length to suit the space intervening between the upright and the roller, and the guard board raised
[598] upon the second cross-piece; its breadth to correspond with that of the machine, including two rollers around which it is to revolve, one end of each roller to have its bearing on the guard board, and the other end of each in the perpendiculars, or uprights, sufficiently high enough to suffer the plane or sheet to revolve without interruption from the handles or arms of shears below. The perpendicular or shaft is to be made of suitable material and of suitable height; it is to be placed in the space between the second and
[599] third cross-piece, having its bearings upon the head-block below and the cap above upon it; next to the head-block it has a cog-wheel high up; it has an arm of proper length and construction immediately above the cap; it has a segment of a wheel of proper material; from the foregoing cap to the guard board a horizontal shaft is laid, of suitable length and strength, and at right angles with the perpendicular; it has upon it a spur-wheel on the end next to the cap, and a pulley or band-wheel next to the guard-board.
[600] Either one of the rollers which have been already described must have a pulley on the end next to the guard board, and to stand directly opposite to the band-wheel or pulley on the horizontal shaft. This machine is to be propelled by a horse or horses hitched to a pair of shafts, which are to be attached to the side of the same. The wheels are to be made of suitable materials and proper height, having each a separate spindle or shaft permanently fixed in their centre, so that when the wheels revolve or turn, the spindles or
[601] shafts are made to do so likewise, the bearing of each to rest upon the side frames and centre cross-piece or head-block of the perpendicular shaft; on the end of one of the spindles or haft next to the centre head-block there is a cog-wheel of proper size and

shape, interlocking the one on the perpendicular shaft, giving motion to it; the arm thereupon strikes the arms or handles of the shears, giving motion to them; the segment above the cap on the same shaft interlocks the spur-wheel on the horizontal shaft, at every round or
[602] revolution giving motion, so that a strap or chain, or otherwise, connects the pulley at the other end with the pulley on the end of the roller, giving motion to the revolving-sheet or plane at intervals; the reel receives its motion from the same ground-wheel by means of a strap and pulley, or chain or line of shaft, as the case may require; the motion of the reel gives motion to the roller, thus by the movement of the horse or horses the whole is put into regular motion. The principle or mode of its operation *are* as follows: The
[603] projectors divide the grain as the machine advances, and direct it into the space or opening made by the shear being shut on the one side, and assists in confining the grain in a proper position to be cut, the shears after receiving the grain, previous to the cut being made, whilst it is in its perpendicular position, the reel, by its revolution, falls into and gathers that quantity received by the spaces, and bends it directly down over the roller; at this particular moment the shears make a cut and open a space on the opposite side,
[604] for the same purpose as before; the grain is then rolled in heads foremost by the roller, and the surface on the reel, which can be made to confine it so tight as to prevent a boy from retaining it in his hands if he were to catch hold of it, by the strength of the springs which the roller moves upon to the revolving plane or sheet, rake or scraper, or the receiver behind the roller; when the surface of the reel leaves the surface of the rollers, the grain falls upon the receiver and remains in that position until two or more cuts
[605] are made, then it is made to pass off at right angles with the direction it came upon the receiver, by the revolving plane or sheet, or rake or scraper, and deposited on the ground by the side of the machine in cuts or gripes. We therefore claim the right of the invention of the reel of open spaces and solid surfaces, the double-edged shear, the roller setting on springs, the revolving plane, or sheet, or scraper; the projectors or dividers of the grain as above de-
[606] scribed, and intended to be used for the purpose of cutting all kinds of grain, seeds, and grass.

WILLIAM SCHNEBLEY,
THOMAS SCHNEBLEY.

Witnesses:
THOMAS JOHNS,
C. SCHNEBLEY.

(For drawing of Woodward's reaping and mowing machine, see original, page 145.)

No. 2488.

No. 7.

The Untited States of America.

To all to whom these letters patent shall come:

Whereas, Jonathan Read, New York, has alleged that he has invented a new and useful improvement in reaping machines, which he states has not been known or used before his application, has made oath that he is a citizen of the United States, that he does verily believe that he is the original and first inventor or discoverer of
[607] the said improvement, and that the same hath not to the best of his knowledge and belief been previously known or used, has paid into the treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property, in the said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Jonathan Read, his heirs, administrators or assigns, for the term of fourteen years from the twelfth day of March, one thousand eight hundred and forty-two, the full and exclusive right and liberty of making,
[608] constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Jonathan Read in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made
[L. S.] patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand at the City of Washington, this twelfth day
[609] of March, in the year of our Lord one thousand eight hundred and forty-two, and of the independence of the United States of America, the sixty-sixth.

DANIEL WEBSTER,
Secretary of State.

Countersigned and sealed with the seal of the Patent Office.

HENRY L. ELLSWORTH,
Commissioner of Patents.

The schedule referred to in these letters patent and making part of the same:

To all whom it may concern.

Be it known that I, Jonathan Read, of the City, County, and State of New York, have invented a new and useful improvement for reaping, and I do hereby declare that the following is a full and exact description thereof.

[610] This invention is called Read's Horse Power Reaper. The nature of it consists in a cutter or cutters of peculiar shape, with sickle teeth upon the cutting edges. These cutters are vibrated by

means of a crank (acted on through a shaft by one of the supporting wheels of the carriage) and cut the grain as they are drawn forward against it.

To enable others to make and use my invention, I proceed to describe its construction and operation, reference being had to the drawings hereunto annexed, and forming a part of this specification.

[611] The machine is moved like an ordinary cart on two wheels, which are placed back of the centre, to give room for the grain when cut to fall into the bed of the machine, as hereafter described. The machinery is driven by gearing attached to the near supporting wheel (A). Several longitudinal bars (B B B) are placed beneath the bed of the machine, and extend from behind the axle (c) front to the front cross bar (D). These bars are parallel with each other and are used as supports for the machinery above them.

[612] The front cross bar (D) is placed at the front end of the machine, and runs across it. The axle (c) is placed near the back end of the machine. At a short distance in front of the axle is an upright plank (E) which runs parallel with the axle and the front cross bar (D). This plank is twelve to eighteen inches high, and stands upon its edge. The intermediate distance between the plank and the front cross bar is occupied by the bed of the machine and the rake; on the inner side of the front cross bar and on the front side of the plank are grooves (G G), extending entirely across

[613] the machine, and in the grooves the slides of the rake work as hereafter described. The bed (F) is formed by slots (A 2 A 2 A 2 A 2 A 2) running across the bottom of the machine immediately under the rake (B 2), with small spaces between them, in which the fingers of the rake pass when drawing the grain off. The bed is sufficiently wide to admit the longest grain when cut. Where the near side of the bed (F) and plank (E) come together, is an up-

[614] right standard (H) having a slot (I) in it, in which slot is placed the handle end of the regulating lever (I 2) hereafter described.

On the front cross bar is a block (J) that is placed between the horse shafts (K K). The near end of this block holds the forward end of the cutter shaft (L), and the other end of the block holds the front end of the rake shaft (M). To the off end of this block is attached the lower end of the upright standard (N), which at about half its height extends over the off horse shaft and is attached to the

[615] near side of the bed. From this point it continues sufficiently above the side of the bed to admit and hold the near end of the shaft (O) of the creel (P). This standard (N), by extending over the off horse shaft, leaves room between the lower part of it, and the side of the bed, for the said horse shaft to raise and fall, as required by the regulating lever (I 2) hereafter described. The creel (P figures 1, 2, 3 and 4) is made with two heads (Q Q), and one or more central discs (R), with the shaft (O) running through the

[616] whole. The near end of this shaft is held as already described, and its off end is held by a standard (S). This last standard is fastened to the off side of the bed, and its lower end is attached to the off end of the front cross bar beyond the off side of the bed. Several wires (T T T T T), pass from one head of the creel (through the disc) to the other head, and are intended to draw the grain in upon the cutter. They may run straight across the ma-
[617] chine as represented in the drawings, or may be placed diagonally from the heads to the disc bearing outside. The near end of the creel shaft (O) runs through the standard (N) on the block (J), and to this end of the shaft is attached a pulley (U) over which runs a band (V) connected with the back gearing hereafter described, and by which the creel (P) is turned. The cutter (W) is one piece of plate steel lying flat on the cross bar (D). The front edge of this cutter presents long and shallow indentations or waves.
[618] These indentations have sickle teeth direct and reversed on each other angle or side of the indentations, so that each side cuts the grain when drawn against it. The cutter lies directly across the front of the machine from the off horse shafts to the off side of the bed. The indentations are four times as long as they are deep. There is an arm or platform (X) attached to the near end of the cutter. The pitman connects with the cutter crank (Y), which last is on the front end of the cutter shaft (L). The crank and pitman are
[619] of the ordinary construction, and through them the vibratory motion is given to the cutter. The shoulders or partitions (Z Z Z Z Z), though represented in figure 3, may be more clearly understood from figure 6. They are projections of different lengths, some six inches, and others twelve inches in length. The back ends of these shoulders are set in and fastened on the top of the front cross bar below the cutter and the front, and pointed ends extend forward to divide the grain as it comes to the cutter. These shoulders are of plate steel, and on either side are provided with notches
[620] or saw teeth that hold the grain while it is cut. The rake (B 2) may be clearly understood by reference to figure 8. It is formed of two wide pieces of thin wood, to be used as slides (C 2 C 2). These slides are connected by two bars of wood (D 2 D 2), (only one of which is seen in the drawings) running lengthways of the machine. From these bars five or more arms (E 2 E 2 E 2 E 2 E 2)
[621] over the bed. On the extended end of each arm is a finger (F 2 F 2 F 2 F 2 F 2, Fig. 9). The extreme edges of the slides pass into the grooves (G G, Fig. 8) in the front cross bar (D) and the plank (E, Fig. 8), and the wood of these slides must be of sufficient strength to sustain the rake. The fingers are held by a bolt through the end of each arm, and allowed to hang loosely, though so secured that they never can form an angle of more than
[622] forty-five degrees with the arms outward, though they may double up quite close to the arms inward from the ends to

which they are attached. These fingers have this play, so that (as will be seen and understood by reference to figure 9), when the rake is passed in, they give to the grain that is on the bed and pass over it. The extended ends of the arms pass far enough beyond, or through the off side of the bed, as to allow these fingers to drop down, when in passing the rake in they get beyond the grain. Having reached
[623] this point and fallen, they remain at an angle of about forty-five degrees, and as the rake is drawn out, they hold and bring out the grain on the bed of the machine as the rake is drawn out. When the grain reaches the near side of the bed it falls in a bundle to the ground directly behind the horse and inside of the near wheel, where it remains ready for the binder.

Reference to figure 9 will explain the manner in which the rake is controlled. Here (G 2) is one of the pulleys (both of which (G 2 G 2)
[624] may be seen in figure 8 more distinctly as to position) that move the rake. A band (H 2) passes round the pulleys, crossing under it. One end of this band is attached to the near end of the rake, and the other end is fastened to one of the arms near the finger. In this figure (9) may also be seen the finger as it hangs down at an angle of forty-five degrees, the dotted lines showing the manner in which it doubles up when the rake is run into the bed over the
[625] grain. The two bands (H 2 H 2) may be seen more clearly in figure 8. The pulleys (G 2 G 2) are placed on the rake shaft (M), one end of which is in the block (J) already described, and the back end of which is in the back upright plank (E) mentioned above. This shaft lies between the fills or horse shafts (K K) and back of the horse. The regulating lever (I 2) is used for raising or depressing the front end of the machine, so as to make the cutter (W) strike the grain at any given distance from the ground as described
[626] below. The front end of this lever (which may be clearly seen by reference to figure 1), is attached to the near side of the bed by a pin (J 2) and a hasp (K 2), and works free; on the under side of this lever and near the front end is a shoulder (L 2) that rests on the off shaft. The other end or handle (M 2), of the lever runs through a standard (H) already described. Holes are made in this standard to receive a movable pin that holds the handle at any given point. The horse shafts are only fast at their back extremity
[627] near the axle. By depressing the handle of the lever the shoulder is forced down upon the off horse shaft, and the bed, cutter, and rake all raised together, while by raising the handle of the lever all these are depressed, the pressure of the shoulder on the shaft being taken off. The shafts can so hang on the horse as to bring the cutter within eight or nine inches of the ground, and the regulating lever may at any moment increase this distance to two feet or more, if required.

[628] The near main or driving wheel (A) is permanently connected with a large cog wheel (N 2) which is on its inside.

This cog wheel drives a small pinion (O 2); on the same shaft with this pinion is a large bevel cog wheel (P 2) that works into a small bevel pinion (Q 2) on the back end of the cutter shaft (L). The shaft (R 2) of the first pinion extends crossways of the machine, and near its off end is a pulley (S 2), connected by the cord or band (V) with the pulley (U) on the near end of the creel shaft (O). The
[629] cord or band (N) passes over two small friction rollers (T 2 T 2), that are held in an upright standard (U 2), attached to the axle (C), and in a line between the said two pulleys. The near end of the first pinion shaft (R 2) passes through an upright standard (V 2) attached (at the lower end and behind the driving wheel) to the near longitudinal sill (B) above this sill is a short rave (W 2); and on the inside of it is attached the lower end of another up-
[630] right standard (X 2) passing through a groove in the rave. The upper ends of these last standards (V 2 and X 2) are connected by a small connecting bar (Y 2), and they are used for throwing the machine in or out of gear. There is a small wedge (Z 2) which fits in the groove of the rave on either side of the standard (X 2). To throw the machine into gear, the upper end of the standard (X 2) is pressed forward. This draws the standard (V 2) forward, so that the small pinion is brought into the cogs of the large
[631] cog wheel, and by placing the wedge (Z 2) back of the standard (X 2) the whole machine is held in gear. The back end of the rake shaft (M) is held by a bearing and cap (A 3) on the back cross plank (E), and to the end of the shaft (beyond the bearing) is attached a crank (B 3) and handle (C 3), which the conductor turns to throw the rake in or out.

During the past summer, I have had a large machine in the harvest field, which operated to the entire satisfaction of a number of respect-
[632] able witnesses, and, as that differed in some respects from the present model, I deem it necessary, in accordance with the sixth section of the Act of Congress of 1836, to state these differences, although they are fully marked in the drawing accompanying this specification.

On the large machine, instead of one vibrating cutter, I have one vibrating bar (D 3, fig. 6), to which a number of small cutters (E 3, E 3, fig. 6), are attached, each made of plate steel, and nearly in the
[633] shape of a heart, the points being presented to the grain. Both sides of these cutters are sharp, with sickle teeth (F 3, F 3), reversed, or cutting backward. The back of each cutter is fastened to the top of the front cross-bar (D) by a bolt (G 3), on which it plays freely. A little forward of the centre of each cutter, another bolt (H 3), connected with the vibrating-bar (D 3), also playing freely. As the bar (D 3) vibrates, the points of the small cutters (E 3, E 3) are thrown to and fro, cutting the grain against the shoulders (Z Z Z).
[634] The distance between the bolts H 3 and G 3 is sufficient to allow the points of the cutters to play nearly twice as far as

the vibratory-bar (D 3) moves. A flat plate (O 3) of thin iron rests on the cutters, and is permanently attached to the top of the front cross-bar (D). (This plate is better seen in fig. 11.) Above each cutter, a semicircular slot (P 3, fig. 11) is cut through the iron plate. A small iron stud (Q 3, fig. 10) is permanently fastened to the top of
[635] each cutter, and extends up a short distance above the iron plate through each slot. On the top of each stud, is a clearing plate (fig. 7, I 3), of the same size as the cutter (E 3, fig. 6), but having deep circular notches (J 3, fig. 7) on each side, curved backward from the point. The back of each clearing plate, beyond the notches at K 3, fig. 7, is bent down, so that the back end is held by the same bolt that holds the back of each cutter passing through the
[636] bolt-hole (L 3, fig. 7). By this arrangement, the clearing plates move with the cutters, and throw the butts of the grain back on to the bed (F) of the machine, keeping the cutters always clear of the falling grain.

The creel (P), instead of being formed with wires, as represented in the model and figures 1, 2, 3, and 4 of the drawings, is constructed as represented in figures 5 and 12, with floats (M 3). From the periphery of each head (Q), extend a number of arms (N 3), straight, as
[637] in figure 5, or forming an angle of not more than twenty-two degrees, with a line drawn through the centre of each head (as represented in figure 12), and these arms lean down and forward. On the ends of these arms are placed the floats (M 3) of thin wood, or other suitable material (extending the whole length of the creel), and wide enough to draw in the grain.

Operation.

The machine being thrown into gear, and drawn forward by horse or other power, the large cog-wheel (N 2) drives the small pinion (O 2) with its shaft (R 2), and the large bevel cog-wheel (P 2). This
[638] last works the bevel pinion (Q 2) and the cutter-shaft (L), while the crank (Y) on the front end of the cutter-shaft, gives a vibrating motion to the cutter (W). The pulley (S 2) on the small pinion-shaft (R 2) starts the cord or band (V), and this passing over the pulley (U) of the creel-shaft, gives a motion to the creel (P), which draws the heads of the grain down, bringing them to a closer contact with the cutter, which latter cuts the grain that falls length-
[639] ways into the bed (F). When a sufficient quantity of grain has fallen upon the bed, the conductor turns the handle (C 3) of the crank (B 3) of the rake-shaft (M), and the cords (H 2 H 2) of the rake-pulleys (G 2 G 2) bring out the rake (B 2), while the fingers (F 2) of the rake having dropt down from the arms (E 2), draw out all the grain from the bed, dropping it on the ground behind the horse. The conductor then reverses the motion of the crank (B 3), when sufficient grain has fallen into the bed to make a bundle, throws

[640] the rake again across the bed, the fingers (F 2) shutting up and passing over the grain until they get beyond it, when they again drop down, and the rake is ready for a fresh operation.

Description of the Drawings.

Figure 1, is a view of the near or working side of the machine.

Figure 2, is a front view of the same.

Figure 3, view of the same from above.

Figure 4, a back view.

Figure 5, view of the fan-creel, as operated in the field.

Figure 6, represents the cutters of the large machine, with their
[641] bolt-holes, vibrating-bar, and long and short shoulders.

Figure 7, clearing-plate, with its bolt-holes and notches.

Figure 8, a sectional view of the rake, with its slides, shafts, and grooves in the front cross-bar and back upright plank.

Figure 9, another view of the rake, with the arm extended, and showing the manner in which the fingers rise and fall, also the manner in which the cord passes over the pulley.

Figure 10, shows one of the small cutters, and one of the clearing-plates, with the iron plate above the cutter. The drawing shows the
[642] manner in which all these are connected by one bolt behind, and the small stud (Q 3) passing through the iron plate, and attached to the cutter below, and the clearing-plate above.

Figure 11, the iron plate (between the cutters and clearers) with, its slots (P 3).

Figure 12, one head of the fan-creel, showing the position of the arms and floats.

Figure 13, the cutter as represented generally in the drawing, and seen in the model, being one cast-steel plate, with indentations and sickle teeth.

A, the near supporting and driving wheel; B B, the longitudinal
[643] bars; C, the axle; D, the front cross-bar; E, upright cross-plank; F, the bed; G G, grooves for slides of the rake; H, upright standard with slot (I), through which the handle of the regulating-lever passes; J, block that holds the near ends of cutter and rake-shafts (L and M); K K, horse-shafts, or fills; L, cutter-shaft; M, rake-shaft; N, upright standard that holds the near end of creel-shaft (O); P, creel; Q Q, heads of the creel; R, disc of the creel;
[644] S, standard on the off-end of cross-bar (D), that holds the off-end of creel-shaft; T T T T, wires of the creel; U, pulley of the creel; V, band that carries the creel, running over pulleys (U and S 2); W, the cutter; X, pitman of cutter, with its crank; Y Z Z Z Z Z, shoulders attached to the front cross-bar, running into and dividing the grain; A 2 A 2 A 2 A 2 A 2, slots running across the bottom of the machine on the longitudinal bars (B B), and forming
[645] the bed; B 2, rake; C 2 C 2, slides of the rake; D 2 D 2, bars of the rake connecting the slides, and from which extend the arms E 2 E 2 E 2 E 2 E 2 of the rake. These bars can be

seen by referring to figure 9. F 2 F 2 F 2 F 2 F 2, fingers of the rake at the ends of the arms (see figure 9); G 2 G 2, pulleys of the rake, with their bands H 2 H 2; I 2, regulating lever, with its pin
[646] J 2, and hasp K 2; L 2, shoulder of the regulating lever; M 2, handle of said lever passing through slot (I) of upright standard (H); N 2, large cog-wheel fastened on inside of driving-wheel (A); O 2, pinion working into large cog-wheel (N 2); P 2, large, bevel cog-wheel, with its bevel pinion Q 2 on back of cutter-shaft (L); R 2, shaft of pinion O 2, with its pulley S 2; T 2 T 2, friction-rollers, over which passes band (V) of the creel; U 2, standard to hold the friction-rollers; V 2, movable standard attached to the near
[647] longitudinal bar (B), and holding the near end of the pinion-shaft (R 2); W 2, rave on near end of longitudinal bar (B); X 2, movable standard passing through the groove of the rave (W 2), and attached to the inside of said rave; Y 2, bar connecting standards V 2 and Y 2, by which the machine is thrown in or out of gear; Z 2, wedge, fitting either side of standard V 2, to hold the machine in or out of gear; A 3, cap over bearing, on back plank (E), to hold the
[648] back end of rake-shaft (M); B 3, crank of rake-shaft, with its handle C 3; D 3, vibrating-bar (see figure 6); E 3 E 3, small cutters on the large machine (see figure 6); F 3 F 3, sickle teeth on sides of cutters (figure 6); G 3 G 3, bolts on the back of the above small cutters; H 3 H 3, bolts where the small cutters are connected with the vibrating-bar D 3 I 3 (figure 7); clearing plate with its circular notches; J 3 J 3 J 3 K 3, spot where the clearing plate bends
[649] down to join the cutters below; (this spot may be better seen in figure 10); L 3, hole in the bent part of clearing plate, to fasten it to the cutter (see figure 10); M 3, floats of fan-creel (seen clearly in figures 5 and 12); N 3, arms of fan creel, seen also in figures 5 and 12 more clearly; O 3 (figure 11), iron plate over the cutters, with its slots P 3 P 3, in which play, and through which pass, the
[650] small iron studs Q 3 Q 3, connecting the cutter below with the clearing plates above. I claim and desire to secure by letters patent, as my invention, the construction of the vibrating cutters with serrated edges, whether said cutters be connected together so as to form a vibrating-bar, or be placed separately on a bar of this kind, as set forth, in combination with the stationary teeth or blades serrated in a similar manner, and arranged below the former as described. I also claim the mode of constructing the rake, and combining it with the bed of the machine, by forming it with the pointed
[651] fingers on the ends of the arms, and arranging the fingers in spaces formed in the bed, as set forth. I also claim the manner of discharging the grain from the bed, by means of said rake, and in the manner already described.

JONATHAN READ.

Witnesses:

S. S. ELLIS,
H. F. READ.

(*No.* 8.)

Jonathan Read, being about eighty-two years of age, and having been by me first duly cautioned and sworn, as above stated of the first witness. I carefully examined the said Jonathan Read, and he did thereupon depose and say as follows:

1. What is your residence?

[652] 1. A. I reside at present at Williamsburgh, New York, that is over 100 miles from Albany, New York.

2. Were you formerly engaged in the manufacture and construction of reaping machines, and how early did you make your first experiments in making such machines?

A. It was either in 1840 or 1841, I am not certain which, that I commenced making reaping machines.

3. Q. Did you put a reaping machine into operation; and, if so, when, for the first time?

A. I did, in 1841.

[653] 4. On that machine, did you use a reel? and, if so, describe the construction of it, its use, and for what purpose it was used.

A. I did. The first reel I made had ten beaters. The beaters' arms were about two and a half feet each way from the shaft, making the reel five feet in diameter. It was supported at each end by a standard from the foundation of the machine, the standards being on each side of the machine. On the right hand of my machine, I had a board three feet high about, next to the standing grain, and extend-

[654] ing from the hind part of the machine to the standard which supported the reel, and this board extended forward of the standard some 15 or 18 inches, forming a point; then I had some pieces of wood on each side of this board, running back nearly to the cutters. The board on the outside next to the standing grain, from the point sloping up to from four to six inches at the rear. The board on the inside was about half the width as the other, of the same form, but not running back so far as the cutters.

[655] 5. State the position of the upright standard in relation to the cutter?

A. The standard stood forward of the cutter. I think in that machine close to it, so that the cutter would pass back of it.

6. Q. Did you, in machines afterwards made, change the position of the standard in any respect? if so, in what respect?

A. I did. In some machines it was set back of the cutter, but, in a different machine, with a different reel.

7. Q. What was the object or design of the outside board next the standing grain?

[656] A. It was to press the grain off from my rake, and the other inside part was to divide the grain so as it would come in contact with the reel.

8. Q. What was the design of the upright board running forward, which you have described?

A. It was to receive the other boards I have described for dividing the grain.

9. Q. State whether or not the inside divider board was so placed, that the reel in revolving swept over it?

(Objected to as leading.)

A. It did in all cases.

[657] 10. Q. What kind of cutter did you use in the machine of 1841?

A. I used various kinds of cutters, but in the model I think it was an indented-edge cutter; a cutter with sickle-teeth. It was in three or four sections, secured to a bar of iron.

11. What model do you speak of in your last answer?

A. The model at Washington, I deposited there for the sake of getting a patent, and I did not get one in 1842.

12. Where did you then reside?

A. In New York City.

[658] 13. Q. Did you use a machine built after that model in cutting grain, and where?

A. I used a machine very similar to the model 1841 in New Jersey, Jersey City. I next used the Jersey's about two miles back of Jersey City the same season. It was used several different times that season at the same points.

14. Q. State when you next used a machine of this description, and where?

A. I used it at the City of Washington next, in 1842 and 1843.

[659] 15. Q. State how the machine worked or performed in reference to cutting the grain?

A. The machine cut the grain very well, so as to satisfy everybody that saw it.

16. Q. How was the grain carried off from the machine?

A. The grain was carried off by a rake, having five long arms extending across the bed of the machine; at the end of each arm, on the under side, was an iron finger hung, which shut up as it pressed the grain. When it had passed over the grain the fingers dropped,

[660] and took the grain off and dropped it on the side behind the horses. This rake was moved by going, attached to it and a crank turned by a man standing or sitting on the machine nearly behind the horses, about on a line of the nigh shaft of the horse over the edge of the bed of the machine.

17. Q. Did you use the reel in all the machines you have alluded to?

A. Yes, I did.

18. Q. Did you use another mode of getting the grain off the machine than the one you have described?

[661] A. I used no other mode only through the same rake turned bottom upwards, running under the grain instead of over it.

19. Q. Describe the mode of attaching the horses to your machine?

A. They were placed ahead of the machine, and drew it in the first instance. I used long shafts running back to the axle. The horses travelled by the side of the standing grain, over the ground where the last swath was.

20. Q. Hand machines of your invention continued to be made and used to this day?

[662] A. They have been experimented on every year, and have been used more or less.

21. Where did you go to from Washington?

A. I went to Burlington, in Iowa, in 1844.

22. Did you there see any of the plaintiff's patent Virginia reapers in that year?

A. I did.

23. Where did you see them in operation, cutting grain?

A. I saw one at about six miles from Burlington, at Governor Chambers', the Governor of Iowa. I saw some at Burlington, said to be Mr. McCormick's machine.

24. Had the machine that Governor Chambers used a seat for a raker?

A. It had.

[663] 25. Did you see that machine in actual operation, cutting grain?

A. I did, for an hour or two, in 1844 or 1845. I think the next season after I left Washington.

26. Q. By whom was the machine, used by Governor Chambers, built?

Governor Chambers told me it was McCormick's.

(This answer objected to as hearsay.)

27. While the machine of Governor Chambers was in operation, did a person actually sit on the seat and rake off the grain?

[664] (Objected to by Mr. Keller, on the ground that it does not appear that this machine was made by plaintiff, or under his directions.)

A. There did.

28. Are you acquainted with the reaper known as McCormick's patent Virginia reaper? and, if so, how long so acquainted?

A. I am acquainted with his machines for reaping, and have been these ten years.

29. Was the machine you saw in use at Governor Chambers one of the description known as McCormick's reaper?

A. It was.

30. Was, or was it not, like his reapers? such as have been in use for the last three or four years?

[665] A. I never noticed any great difference, except the seat being higher in those lately in use.

31. Was the reel any impediment to raking off the grain on the machine you saw in use at Governor Chambers?

A. They occasionally had some trouble in throwing the rake in and hauling off the grain in good order.

32. What was the cause of that trouble?

A. I think it was because the grain fell too fast for them. The horses travelled fast, in order to cut the grain.

33. Was the reel in any way the cause of that trouble of raking?

[666] (Objected to by Mr. Keller, as the witness has already testified that the reel was in the way.)

A. It might in some degree, because the rake occasionally came in contact with the reel.

34. Did you at any time use an iron on the inside of the vertical board you have mentioned, for any purpose? and if so, for what purpose, and describe the iron?

A. I did in all cases; an iron hook put on the point of the board forward, running back as far as the side-board went.

[667] 35. Did you use in your first machines a tooth projecting forward of the cutter?

(Objected to as leading.)

36. Did you use any iron in connection with the cutter? and if so, for what purpose? and describe it in your first machines?

A. I used iron drivers running into the grain, to separate or divide the grain, running two or three inches ahead of the cutter. The iron was about five-eighths of an inch wide, and was fastened on to a wooden

[668] bar; it tapered off, not all the way, but from about an inch to the point where it went into the grain. Something about 4 or 5 inches apart.

37. Did you use in these machines any method of holding the grain to the sickle or cutter? and if so, describe it?

A. I did on the machine of 1841, but not in the rest. These fingers were brought to a point, and nigh the cutter beam; these dividers were narrowed down towards the beam, so as to form a shoulder on each divider on both sides between the two fingers. On that bevel

[669] there were notches like saw-teeth filed in, in order to hold the straw from pressing off when it came in contact with the cutters.

38. Did the plaintiff to your knowledge see, at any time, one of your first made machines or a model of one of them?

A. Not to my knowledge.

39. State, if you can, the angle at which the inside divider board was placed with reference to the bed of the machine?

Objected to as leading.

A. The inside board projects into the machine, I think about three inches, going ahead, until it comes in contact with the outside board at the point.

[670] 40. Did, or did not this inside board run straight back, or did the rear end of it lie higher or lower than its point?

(Objected to as leading.)

A. It ran straight back, and the after end was a little higher than the point.

41. Did you ever use any other divider or means of separating the grain to be cut from that left standing, than that already described by you?

A. I never used any other in principle; size, sometimes different.

Being cross-examined by the counsel for plaintiff.

[671] 1. Did you, in the letters patent, which were granted to you in 1842, embody the improvements in reaping machines made by you, up to that time?

A. I did not.

2. How did the machine described in your patent differ from the one you constructed in 1841?

A. It was very similar; I can't recollect the difference to describe it.

3. How much higher do you suppose the wedge-formed board attached to the inside of the upright board was at the rear end, than at the forward end?

[672] A. There was a very little difference. I think the point was a little lower if anything.

4. How high was the perpendicular board at the reel-standard, the right hand board?

A. It was, the first one, about two feet and a half high.

5. The hoop iron which you have stated was attached to the edges of the side boards, was it not directly attached to the edges of the boards for the purpose of protecting the wood?

A. It was for that express purpose, and to divide the grain.

6. How thick was it?

A. It was a scant one eighth inch thick, and about an inch wide.

[673] 7. Was it not secured directly against the edges of the board?

A. It was, by screws.

8. How many of your machines are now in operation?

A. Not one that I know of.

9. How long was any one of your machines continued in use?

A. Not over two seasons.

10. How much grain did it cut each season?

A. Some hundreds of bushels each season. The rake did not operate well, except under my care, or a good machinist.

Re-direct.—Being again examined by defendant's counsel.

[674] 1. Did the machine operate well in other respects except the raking, or did it not?

A. It operated well in all other respects except the raking.

2. How high was *was* the top of the vertical board at the reel-standard from the top of the bed of the machine?

A. Two feet and a half.

3. At the time of the construction of the machine in 1841, did you know of any other reaping machine in existence.

A. I never had seen nor heard of one.

JOHNA. READ.

[675] Read to, and subscribed and sworn to, by Jona. Read, the witness, on his examination, before me, this 10th day of October, 1854.

CHAS. ELIOT SCOVILLE.

(*No.* 9.)

The United States of America, to all to whom these letters patent shall come:

Whereas Obed Hussey, a citizen of the United States, hath alleged that he hath invented a new and useful improvement, being a machine for reaping and cutting all kinds of grain, which improvement he states has not been known or used before his application, hath made oath that he does verily believe that he is the true inventor or discoverer of the said improvement, hath paid into the Treasury of the [676] United States the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose: These are therefore to grant, according to law, to the said Obed Hussey, his heirs, administrators, or assigns, for the term of fourteen years from the 31st day of December, one thousand eight hundred and thirty-three, the full and exclusive right and liberty of [677] making, constructing, using, and vending to others to be used, the said improvement; a description whereof is given in the words of the said Obed Hussey himself in the schedule hereto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the United States to be hereunto affixed.

[L. S.] Given under my hand at the City of Washington, the thirty-first day of December, in the year of our Lord one thousand

eight hundred and thirty-three, and of the Independence of the United States of America, the fifty-eighth.

ANDREW JACKSON.

By the President:

[678] LOUIS MCLANE,
Secretary of State.

CITY OF WASHINGTON, *to wit:*

I do hereby certify, that the foregoing letters patent were delivered to me on the thirty-first day of December, in the year of our Lord one thousand eight hundred and thirty-three, to be examined; that I have examined the same, and find them conformable to law; and I do hereby return the same to the Secretary of State within fifteen days from the date aforesaid, to wit, on the thirty-first day of December, in the year aforesaid.

B. F. BUTLER,
Attorney-General of the United States.

[679] The schedule referred to in these letters patent, and making part of the same, containing a description, in the words of the said Obed Hussey himself, of his improvement, being a machine for reaping or cutting all kinds of grain.

Be it known, that I, Obed Hussey, of Cincinnati, in the County of Hamilton, and State of Ohio, have made an improvement in the useful arts, being a machine for reaping or *or* cutting all kinds of small grain and grasses, which is described as follows, reference being had to the annexed drawing:

[680] This machine consists of a frame, *a*, formed of two sills, four posts morticed into the sills, and two short top-rails parallel with the sills; with several cross-rails connecting the sills, posts, and top-rails. To the two front posts is fixed the main axle, *b*, on the ends of which are wheels of a convenient diameter, say three [or] four inches, more or less, which run on the ground and sustain the forward part of the machine, and give motion to the saw or cutters hereafter described, by which the grain is cut. In the

[681] rear of the machine the sills extend several feet. Across the sills, and in the rear of the wheels before mentioned, is fixed a platform, *c*, extending one side, which for perspicuity we will call the right side of the machine, about six feet beyond the line of the right wheel; the rear of the machine is sustained by a single wheel or roller, *d*, running on the ground and raising the platform about nine inches from the ground. This platform moves horizontally, and is about three feet wide; on the front edge of the platform is fixed the cutting or reaping apparatus, which is constructed in the

[682] following manner: a series of iron spikes, *e*, which I will call guards, are fixed permanently to the platform, and extend seven or eight inches, more or less, beyond the edge of the platform,

parallel to each other, horizontal, and pointing forward. These guards are about three inches apart, of a suitable size, say three-quarters of an inch square, more or less, at the base, and lessening towards the point. These guards are formed of a top and a bottom piece, joined at point and near the base, lying nearly parallel and
[683] about one-eighth of an inch apart, forming a horizontal mortice or slit through the guard. These mortices being on a line with each other, form a continued range of openings or slits through the guards. The first guard is placed on the rear of the right wheel, and the last at the extreme end of the platform, and the intermediate guards at equal distances from each other, and three inches apart, more or less, from centre to centre. The cutters or saw, *f*, is formed of thin, triangular plates of steel, fastened to a straight, flat rod, *g*, of steel, iron, or wood, one inch and a half wide.
[684] These steel plates are arranged side by side, forming a kind of saw, with teeth three inches at their base and four and a half inches long, more or less, sharp on both sides, and terminating nearly in a point. The saw is then passed through all the guards in the aforesaid range of mortices, the size of the mortices being suited to receive the saw with the teeth pointing forward, observing always that the points of the saw-teeth should correspond with the centres
[685] of the guards. One end of the saw is connected with a pitman, *h*, which pitman is moved by a crank, *i*, receiving its motion from the main axis, by one or two sets of cog-wheels. The vlbration of this crank must be equal to the distances of the centres of the guards, or the points of the saw-teeth, or thereabouts, so that when the machine is in motion the point of each saw-tooth may pass from centre to centre of the guards on each side of the same tooth, at every vibration of the crank. If the main-wheels are three feet
[686] four inches in diameter, they should in one revolution give the crank sixteen revolutions, more or less. The saw-teeth should play clear of the guards both above and below. When the machine is extended to a large size, the platform should be cut off between the right sill and the first guard and immediately behind the right wheel, and the two parts being secured together by hinges or otherwise, and a small wheel placed under the extreme end of the platform to sustain its weight.

In the operation of this machine the guards form double bearers to
[687] assist the saw-teeth. The wheel, or roller *d*, which sustains the back part of the machine, is hung in a frame, and arranged in such a manner as to operate on the principle of a common castor, capable of being fixed permanently in such positions as to alter the machine, should it be found at any time to incline to the right or left while in use.

Operation.

The power is given by locking the wheels to the main axis. The machine has one square wheel-box, the other round, and locked at

pleasure. If the power should be wanted, one or two, or more horses
[688] are attached and driven on the stubble before the machine, the right wheel running near the standing grain. The platform with the saw on its front edge extends on the right at right angles with the direction of the horses, with the guards and saw-teeth presented to the standing grain. When the machine moves forward the saw moves with the teeth endwise and horizontal; the grain or grasses is brought between the guards; the saw-teeth, in passing through the guards, cut off the stalk, while held both above and below
[689] the saw. The butts of the grain receive an impulse formed by the motion of the machine while in the act of being cut, which causes the heads of the grain to fall directly backward on to the platform. In this manner the platform receives the grain until a sufficient quantity is collected to make one or more bundles according to the pleasure of the operator, then it is deposited with a proper instrument by the operator, who may ride on the machine. The following are the dimensions of a machine suited for two horses: The
[690] sills, top-rails, and cross-rails are three by four inches square of oak; the posts 3 by 5 inches of oak; the planks for the platform are one and a half inch thick, of good pine or other suitable materials; the platform formed of two or more pieces in width, secured together with battens; the sills are about seven feet long; the top-rails about three and a half feet long; the posts are framed about two feet apart from outside to outside, and from the under side of the sill to the top side of top-rail is about two feet three inches,
[691] and the whole, when connected by the cross-rails, to be about three feet six inches wide from outside to outside of the sills; the back ends of the sills may extend about three feet seven inches in the rear of the hind posts; a space of three feet or thereabout will be occupied by the platform, bringing the front edge of the platform seven inches behind the foot of the rear post, so that the points of the saw-teeth may be nearly on a line with the back part of the posts. The main shaft may be two inches in diameter, of wrought
[692] iron, and hung to the forward side of the posts with journals fitted to boxes bolted to the posts; near the middle of this shaft is a spur-wheel, *k*, about two feet in diameter, of cast iron, which plays into a pinion, *l*, of six inches in diameter, on a second shaft, *m*, which is hung on the top rails. On the second shaft is a level wheel, *n*, of about sixteen inches in diameter, playing into a pinion, *o*, of about four inches diameter, on the crank-shaft, *p*. This
[693] shaft is at right angles with the second shaft, and placed in an inclined position, so that the lower end of the shaft may turn in a strap on such part of the platform as to admit the crank, *i*, nearly on a line with the back of the saw, in order to admit a fair operation of the pitman, and the upper end is so hung that it may be ungeared at pleasure. The main-wheels, *g*, may be made similar to coach-wheels, but wide on the tread, say about three inches, and

about three feet four inches diameter; the hubs about seven inches
[694] long and the same in diameter; the rear-wheel of any size, from one to two feet diameter. The back of the saw may be from one inch to one and a half inch wide, and from three-sixteenths to one-quarter of an inch thick; and the steel plates for the teeth should be about one-tenth of an inch thick; one end of the mortice in the guard should be fitted to receive the back of the saw, so that the bearing may be on the back of the saw only. A tongue
[695] may be fitted in the mortice, *s*, similar to that of a wagon. These dimensions may be varied to suit the convenience of the constructor.

In this machine the following points are claimed as new and original:—1. The straight horizontal saw, with the teeth sharp on their two sides, for cutting grain. 2. The guards forming double bearers above and below the saw, whereby the cutting is made sure, whether with a sharp or a dull edge, the guards at the same time protecting the saw from rocks or stones, or other large substances it may meet with. 3. The peculiar construction that the saw-teeth may run free,
[696] whereby the necessary pressure and consequent friction of two corresponding edges cutting together, as on the principle of scissors, is entirely avoided. 4. The peculiar arrangement by which the horses are made to go before the machine, being more natural, and greatly facilitating the use of the machine and the general arrangement of the parts as above described. In cutting grass the platform is reduced in width, and the grass falls on the ground as it is cut.

OBED HUSSEY.

Witnesses—JOTHAM SINCLER,
HENRY DIBBLE.

(*No.* 10.)

Obed Hussey, having been first carefully examined, cautioned, and
[697] duly affirmed according to law, and being examined on the part of the defendants, deposes, answers, and says, as follows, to the questions:

Question. What is your age, residence, and occupation?

Answer. I am 50 years old. I follow building reaping-machines; that is my chief business; and I reside in Baltimore.

Question. How long have you been engaged in the business of building reaping-machines?

Answer. Since the spring of the year 1833; the machines were used in the harvest of that year.

Question. Where did you first commence building machines?

Answer. At Cincinnati, Ohio.

[698] Question. How long did you continue to build them there?

Answer. Three springs—until after the third harvest—that is, for the harvest of the years 1833, 1834, and 1835.

Question. When and where did you next build reaping machines?

Answer. In Hagerstown, in the State of Maryland.

Question. For what length of time did you build them there, and in what years?

Answer. The next year after I left Cincinnati—that is, in the year 1836. I built them there only one season; this answer is according
[699] to the best of my recollection. I could refer to memoranda that I have in my possession, and state accurately.

Question. Who assisted you in the construction of machines in Hagerstown?

Answer. Mr. Horatio Watkins and his three sons—Richard, Edward, and James.

Question. Do you know whether Mr. Horatio Watkins is alive or no?

Answer. He is not alive; neither is his son Richard alive now.

Question. Do you know where the other sons are?

Answer. One of them, Edward, is present, and the other I presume is at Hagerstown.

Question. Where did you next build reaping machines?

Answer. In Dorchester County, Maryland.

Question. For what length of time did you build there,
[700] and in what years?

Answer. For one season—the year 1838, I believe; the year after I left Hagerstown.

Question. Where did you next build reaping machines?

Answer. In Baltimore.

Question. What year was that?

Answer. 1839; my books will show if I am not correct.

Question. Have you continued to build reaping machines in Baltimore since that time?

Answer. Yes; I have.

Question. What part of the country did the machines you made at Cincinnati go to, to be used?

[701] Answer. The first season they did not go out of the county; the second season they went to Illinois, and I think a machine went to Mexico about that time. The third season they went to Missouri, Illinois, and I think some to Ohio, and two of the build of that year came to Maryland. I think they were built after the harvest of the third season, and came to Maryland after that harvest. They were not used in Maryland at the harvest of 1835—not until the harvest of 1836; I may be in error in regard to
[702] some of the early dates, not having my papers here to refer to. I also built a machine in the City of New York, in the winter of 1834,-'35, which was used in the harvest of 1835, in Livingston County, in the State of New York; the date of making

and using this machine may be wrong. I am not certain whether it was made in the winter of 1833–'4, and used in the harvest of 1834,
[703] or made in the winter of 1834–'5, and used in the harvest of 1835. The "Genesee Farmer," the "Cultivator"—one or both—will give the date of the operation of the machine in New York; there was a lengthy article in one or both of those papers on the subject, which will give the correct date. The "American Farmer" will give the date of the operation of the reaping machine near Baltimore, in the State of Maryland—its first operation.

Question. Where were the machines used that were constructed at Hagerstown?

Answer. They were used in the State of Maryland.

[704] Question. Where were those constructed in Dorchester County used?

Answer. They were used in Maryland, Indiana, and Illinois; I think one was used across the line in Illinois. There were but two used out of Maryland, and they were both forwarded to Indiana; but one, I think, was used in Illinois.

Question. The machines which you constructed in Baltimore prior to the harvest 1847, where were they used?

Answer. They were used in Maryland, Virginia, Pennsylvania, and almost all of the wheat-growing States of the United States; I can't now remember the particular States.

[705] Question. Are you acquainted with Mr. McCormick, the plaintiff in this case; if so, how long have you known him, and when and where did you first see him?

Answer. I am acquainted with Mr. McCormick. I met with Mr. McCormick for the first time near the James River, about twenty miles above Richmond, in the year 1843 or 1844; I think it was in 1843.

Question. On what occasion and under what circumstances did you first see him?

Answer. We were both there for the purpose of using our reaping
[706] machines; it was at a harvest, not at an agricultural meeting. I was there showing my machine to the farmers, and Mr. McCormick appeared to be there for the purpose of showing his machine to the farmers also. I can't say that Mr. McCormick was there for the purpose of showing his machine; it is probable that he was there starting a machine that he had already sold.

Question. Do you know whether Mr. McCormick saw your machine on that occasion?

Answer. Our machines worked side by side, in the presence of the
[707] same gentlemen; Mr. McCormick was engaged in working his, and I worked mine.

Question. Had your machine a raker's seat on it at that time or not?

(This question objected to by the counsel for the plaintiff as lead-

ing. That, if the counsel desire the machine to be described, the counsel should ask the witness to describe the machine, and not point out to him particular parts of the machine.)

Answer. My machine at that time had a raker's seat on it.

Question. Do you know whether Mr. Cormick's machine had a raker's seat on it at that time or not? State your knowledge on that point.

[708] (This question objected to by the counsel for the plaintiff as leading. If the counsel desire the machine to be described, the counsel should ask the witness to describe the machine, and not point out to him particular parts of it.)

Answer. I did not know of any seat on Mr. McCormick's machine.

Question. Can you state whether, on that occasion, the raker rode on McCormick's machine or walked on the ground?

Answer. He walked on the ground.

Question. Will you describe the machines which you constructed at Hagerstown, and particularly with reference to the seat and reel, if any?

[709] (This question objected to by counsel for the plaintiff as leading, in pointing out particular parts of the machine not named by witness as having formed any parts of the machines constructed at Hagerstown.)

Answer. There were no reels made to machines constructed at Hagerstown. With regard to the seat, in one-half of the machines made at Hagerstown the seat was directly over the plank on which the cutters were fastened; over the end of the plank a cutter bar, which extended across the framework immediately behind the horses.

[710] A change was made that year in the other half of the machines, by which the raker was placed a little in the rear of his former position, so that his feet would rest on or near that plank or cutter bar. The reason for changing the position of the seat was that the raker was changed about, so that he faced in a different way from that he before did. (The counsel for the defendants here suggest to the witness that the whole question has not been answered, and asks that the question may be repeated to the witness.)

Question—repeated.

Answer. There were no reels; half of the machines were made

[711] according to the pattern brought from Cincinnati. In these machines, the raker's seat was directly over the plank on which the cutters were fastened. The raker's seat was placed directly over the end of the plank to which the cutters were attached —that part of the plank or cutter bar which was bolted to the framework of the machine, and directly back of the horses. The cutters were fastened on one portion of the plank, and the seat was over the other end; the raker's position was with his back to the horses. The

[712] other half of the machines made in that year were changed, so that the raker faced towards the horses, and the seat was

necessarily farther back, which reversed the position of his feet and his body. I don't know that any other description is necessary.

Question. Can you state whether there was or was not a driving wheel in the machines made by you at Hagerstown?

(This question objected to by the plaintiff's counsel as leading, as describing the machine to the witness for him to affirm or deny.)

Answer. There must be driving wheels to all such machines; mine had two at that time.

[713] Question. How was the raker's seat in those machines, made after the Cincinnati pattern, situated, with reference to the driving wheels?

Answer. It was between and behind the driving wheels, if by the driving wheels you mean those that rolled on the ground.

Question. In all the machines which you made prior to those made at Hagerstown, which way did the raker face with reference to the horses?

Answer. He faced behind, with his back to the horses.

Question. Had or had not all those, prior to that time, a seat for the raker?

[714] Answer. The raker always sat on the machine, in all machines that ever I made. In my first machine the raker sat on the machine. The raker could, in these machines, either sit or stand, at his option. I think that was the case in all; I mean that the raker did, in all my machines, either sit or stand. In my first experiments the raker may not in all instances have done either the one or the other; what I mean to say is, that no quantity of wheat, say a rod or two, was ever cut, without the raker either sitting

[715] or standing on the machine; but in some instances the machine may, and I think was used and followed by a raker for a short distance with a hand rake—a very short distance. The part on which the raker sat in my first machine was so high that in order to get a firm foothold he was obliged nearly to stand up. In my second machine the seat was lowered and a suitable seat prepared for the raker.

Question. Are you acquainted with the machines recently made—that is, within the last three years—by Mr. McCormick, or under his direction?

[716] Answer. I think I am acquainted with Mr. McCormick's machines as constructed within the last two or three years.

Question. Can you state whether there is or is not a part of those machines which he describes as a finger-piece?

Answer. I have heard the term used often, and I think it refers to the plank on which the cutters are attached. There is a plank in McCormick's machine which is in the same position as the plank in my machine, to which the cutters or blades are attached, and I

[717] believe this plank is termed by Mr. McCormick a finger-piece. In my machine I term this plank a cutter-bar.

Question. In the machines you built at Cincinnati, where was the raker's place with reference to this finger-piece or cutter-bar?

Answer. It was directly over the end opposite to which the cutters were fixed—that is, over that end of it which was bolted to the machine, directly behind the horses; I may also say that in some of my machines, a year or two after their first invention, experiments were made, and some machines were constructed, in which the raker occu-

[718] pied the same position in the machine, but leaned back, supported by a half or quarter circle instead of a seat; this corresponds with my models in the Patent Office. The first model had not this half or quarter circle to lean against, but that model was burned in the Patent Office; and when a second model was made, to replace that which had been burned, this or quarter circle was placed in the model; this is according to the best of my recollection; machines were constructed giving this leaning position to the raker, and used, I think, in the third harvest after the machine was first

[719] invented; this is according to the best of my knowledge. They were used, I think, in the harvest of 1835. This of course ceased after the change in the form of the machine made at Hagerstown.

Question. Did you at any time, and if so when, attach a reel to your machine; and if you did, describe it? (This question objected to as leading, by the counsel for the plaintiff. Witness has before stated that he has given a full description, and has not named a reel.)

[720] Answer. When I made my first machine, I made a reel for it. The reel had a roller or centre shaft, cross arms at each end, and four poles running parallel with the shaft. It was a square reel. The poles connected the ends with the arms. This reel was hung over the cutters, as I supposed to be proper for drawing the grain back. It had a band from a pulley on one of the shafts of the machine which drove the reel, or caused it to revolve. I at-

[721] tached a reel to the machine the first time it was ever started—the first time horses were ever attached to it.

Question. Where was this?

Answer. On the farm of Judge Foster, in the town of Springfield, Hamilton County, Ohio. I don't know Judge Foster's first name.

Question. Can you state whether you brought one of those reels to Hagerstown?

Answer. No, I did not, to the best of my knowledge.

Question. Do you remember to have seen one there?

Answer. I do not.

Question. How does the seat on Mr. McCormick's present machine compare with the machines you used in Cincinnati?

Answer. I think the position can't be very different; there is very

[722] little difference. I don't distinctly know the position of Mr. McCormick's raker, not seeing them frequently, but the raker must occupy nearly the same position, as he has precisely

the same duties to do; I refer to the machines first made by me. Upon this answer being read to witness, he desires to correct the same, as follows: I did not mean to say that I did not know the position of the raker in Mr. McCormick's machine, but that I did not know the measurements or precise difference as to the spot where
[723] the raker sits; it may vary an inch or two, but my impression is that they occupy about the same position with regard to the cutters and platform; the duties of the raker in both machines is to discharge the wheat from the machine. In Mr. McCormick's machine this was done by drawing the wheat on to the stubble that had been cut in the previous swath, whilst in my machine the wheat was drawn directly back of the cutters; in my machines the wheat was raked backwards from the cutters.

[724] Question. By the machine first constructed by you, how was the wheat to be cut separated from the grain to be left standing?

Answer. The outer point, sometimes called a finger, projected beyond the other points or fingers, and separated the wheat that was to be cut from that which was to be left standing. I don't recollect whether the machines with which I first experimented had or had not a board to prevent the cut wheat from rolling off to the standing wheat. The point that projected has been from time to time modified, but it still remains, and has always been used to separate the standing
[725] wheat from that to be cut. I have changed the form of the board which was used to prevent the wheat that was cut from rolling off to the wheat that was standing, several times; I have made it of several heights, but the point has always been preserved. The board I mention was used to prevent the wheat that was cut from rolling off. I had a point to separate the wheat to be cut from that left standing, which point was distinct from the point of the board; the board, at least at this time when attached to the machine, forms
[726] a continuous line with the point, but the point is left when the board is detached.

Question. What is the length of that board?

Answer. About four feet.

OBED HUSSY.

And the said Obed Hussy being cross-examined on behalf of the plaintiff, further deposes, answers, and says:

Cross question. How many machines did you construct in Cincinnati, during the first year you said you were building them there?

Answer. Only one.

Cross question. How many did you construct the second year?

Answer. I don't remember but four. I have no distinct recollection of but three, but I think there was another; I mean by these
[727] answers, for the harvest of those years. I think one of the four machines was built in New York. There is some

little confusion in my mind about the dates of the construction of those machines; I can't be perfectly accurate.

Cross question. How many machines did you construct for the third harvest, in addition to those already built?

Answer. Twelve or fourteen; I can't be precise as to the number.

Cross question. How many years were you building machines at Hagerstown?

Answer. One.

Cross question. How many machines did you build in Hagerstown?

Answer. Six.

[728] Cross question. How many machines did you build in Dorchester County, Maryland?

Answer. I don't recollect; I think about the same number.

Cross question. Did you say that you commenced building machines in Baltimore in 1839?

Answer. That is my impression. My papers, however, will show when I first commenced in this city.

Cross question. How many machines did you build the first year you were in Baltimore?

Answer. I think it was sixteen.

Cross-question. Was there any one year between the time of com-

[729] mencing building machines in Cincinnati and your coming to Baltimore, in 1839, that you built no machines?

Answer. There was no year that I have not been engaged in building machines.

Cross-question. How were the seats constructed prior to the manufacture at Hagerstown?

Answer. My first machine had no particular stool designed for a seat especially, but he sat on a board that covered the back part of the machine; this the raker occupied as a seat, without there being any stool or seat made particularly for that purpose. Having found that this place occupied by the raker was a little insecure as a seat,

[730] the board was turned round and placed lengthwise, the end projecting backwards so that he could sit on it, and his legs on one side or the other, or on both, much like a man sitting on a saddle, and giving the raker a firm seat. This was the second machine constructed by me, and used in the second harvest—in fact, it may be said to be the first good machine I made. The first was a temporary machine, constructed as an experiment; it was perfect in its work, and cut as fast as the machines now do, but it was not made

[731] so as to last. The cutting was done as well in the first machine as in any subsequent one.

Cross-question. Were there any other changes made in the machines constructed prior to those in Hagerstown?

Answer. Not in the cutting apparatus. The general form of the wood-work was so changed as to adapt the machine to mowing.

Cross-question. How many of the machines enumerated above were

constructed as mowing-machines, and in what years, as near as you can state?

Answer. I think there were four; one was used in the summer of
[732] 1835, to the best of my recollection, and constructed immediately before. There were three others constructed prior to the harvest of 1836, one was sent to Missouri, and one was brought to the State of Maryland, and now is in Hagerstown. These machines were constructed so that they could be used for reaping and mowing also.

Cross-question. How did the raker succeed in operating in raking the wheat in the machine you first constructed, and what difficulties did he meet with?

Answer. The duties were precisely the same as now, but it was
[733] harder work; and when the change was made, it was found that he could do the work much easier.

Cross-question. How far was it practicable for the man sitting upon the machine first constructed to continue the operation of raking with practical success in 1833?

Answer. No opportunity was had to test how long a man could continue to work upon it.

Cross-question. You have said that you used the reel in 1833; how far did you test the reel that year?

Answer. Only so far as to be convinced that it was not necessary
[734] to the success of my machine, rather an impediment; unless it be absolutely necessary it is an impediment.

Cross-question. Did you subsequently abandon the use of the reel?

Answer. After finding it was of no use, in my opinion, on my machine, I took it off and left it in the field, and have not used it since.

Cross-question. Sitting in the inconvenient position the man did in the machine of 1833, was it not impracticable to rake the grain so as practically to succeed with the as it was then applied?

[735] Answer. The reel was not used long enough to test that question. The machine was constructed to test the question as to whether grain could be cut, and the reel was used so as to make it certain that the grain should be cut, and, when found to be unnecessary, was immediately taken off of the machine. My design was, in the first instance, to drop the wheat at the side of the machine, and for that purpose I had a revolving cloth apron to bring the wheat to the side in aid of the raker. The apron was not designed to drop
[736] the wheat on the ground, but to bring it within reach of the raker who was to drop it. The impracticability of this apron was seen at the same time that the reel was found to be unnecessary, and both were abandoned together, I don't mean that in the sense of the law they were abandoned, but they were laid aside for further consideration.

Cross-question. You have spoken of a model in the Patent Office, which you have described as having a half or quarter circle for the raker to lean against, deposited subsequently to the fire; was that
[737] the mode of construction adopted by you in those machines built by you prior to those built at Hagerstown?

Answer. It is my impression that the 12 or 14 machines constructed in Cincinnati were constructed in that mode.

Cross-question. Did you not find it impossible for a man unsupported, without leaning against the permanent support which you described as the segment of a circle, to rake the grain from the machine?

Answer. That support was no further necessary than to keep the man from being jolted off of the machine by its motion. If he could
[738] keep his place on the machine, he could exert his strength as well without the support as with it. A man would not find it necessary to lean against a post to exert his strength if a machine were stationary. Perhaps this may be better understood by my saying, that a man could not perform the duty of a raker without a firm foothold, and for want of that in my machine it was necessary that he should have some other support.

Cross-question. Do I understand you to say, that without some
[739] additional support than simply leaning against the curve-piece, the man could not do the raking on your machine?

Answer. I did not mean to say that. He has always done it successfully in any position that I have placed him.

Question. Do you not use some additional support to the curve-piece on all your machines, to give the raker permanency of support?

Answer. That curve-piece went out of use at the time the change was made at Hagerstown. I have built a kind of machine since 1841, and am building them this year, where the raker has a seat
[740] with a permanent timber or part of the machine between his legs, with his face to the horses. I built another kind of machine, where the raker is provided with a seat, where he can have part of the seat between his legs, or not, as he may choose.

Cross-question. Were not the few machines built prior to the change at Hagerstown comparatively defective, and was not the success in raking the grain from the machine incomplete until that time?

Answer. Everything is comparative. I thought my machines quite perfect there; I thought the raking was done very well at that time,
[741] but it is done much easier now, and I hope that I may get it better yet.

Cross-question. Have you seen a model in the possession of the defendants, copied from your model in the United States Patent Office?

Answer. I have not.

OBED HUSSEY.

And the said Obed Hussey, being re-examined on the part of the defendants in said cause, further deposes, answers, and says, as follows:

Question. Do you remember the year that you filed the model, after the burning of the Patent Office?

Answer. It was the year that I made machines in Dorchester County. The model was made in Dorchester County.

[742] Question. Did you take out a patent for your machine?

Answer. Yes, in 1833.

Question. Could you, or could you not, do good work when walking with the machine and raking cut grain?

Answer. It is my impression that I could not. The only trial I ever made was behind the machine for a trial. I found that in putting my rake on to take off a bundle, I had to stop, and by time I [743] got the bundle up, the machine got ahead, and I had to run to catch up with it. I do not think it would have been practicable.

Question. After making machines the second year, could, or could not, a man do good work as a raker, and continue to do work all day for a day at a time?

Answer. I think a man could do it, but in my opinion it would be very severe labor. It is my impression that the first year I did good work in the field was in Maryland, harvesting at General Tilghman's. It is my impression that there was one man who did the raking; he [744] may have had assistance, but he did the greater part. There were two men, I recollect, who managed the machine; one who drove the machine, and the other raked. That was the first harvest that the machines were used under my own direction during a whole harvest, and I heard little or no complaint from the raker. There might have been complaints, but if so they were of little or no consequence.

Question. What do you mean by the expression "good work" in your last answer?

Answer. I was not aware that I used the expression. I don't know [745] what I meant exactly by the expression; I don't know but I meant that it was the first year that I went through an entire harvest myself with a machine. The machines always did good work. They all worked well.

Upon this answer being read to the witness, he desired to explain it further, as follows:

I meant to convey the idea that was the first year that a machine under my direction had been put up to its full capacity in cutting an entire harvest.

Question. Look at the exhibit now shown you, marked "Defendants' Exhibit, No. 1." How far did the reel which you made correspond with one used in the drawing now shown?

[746] Answer. There is, in my opinion, but one position for a

reel in all reaping-machines, which is perpendicular over the cutters, or nearly so. My reel, the shaft of it was nearly perpendicular over the cutters as far as I can recollect, and as far as I can understand this drawing, it appears to me to be nearly in the same position, but others can understand it as well as I; it does not seem to be a perfect drawing.

Question. What positions were occupied by the posts that supported your reel?

[747] Answer. I don't recollect having any post next to the machinery. The machine, from its construction, did not need any post for that purpose; the end of the reel was supported by a post of the machine itself, without any particular post for that purpose; that is my impression; it is now so many years since this was done, that I can't recollect whether I put a block on the machine to make it higher or not. The other end of the reel was supported by a post, the form of which I have entirely forgotten.

[748] Question. How did the position occupied by the raker in your machine, that had a reel, correspond with the position occupied by the raker on the machine exhibited in the drawing?

Answer. The position of the raker on my first machine, and on all the machines made by me until I made the change at Hagerstown, was similar to the one on the drawing; the position of the raker seems to be the same, but the attitude of the raker in my machines was very different; in my machines the raker leaned backwards and

[749] braced his feet forward, but in the machine exhibited in the drawing the raker is leaning forward. The feet of the raker in the drawing are under the place where the raker on my machine would sit; his feet are not in the same place that they would be in on my machine, from being supported in front in the machine on the drawing. The duty of the raker in the machine on the drawing seems to be to draw the wheat out to one side, which makes it necessary or convenient for him to lean forward. The raker on my ma-

[750] chine having to push the wheat backwards, it was more convenient for him to lean back and brace his feet forward, and support himself from behind.

Question. Up to the time of the change at Hagerstown, was or was not the position of the raker in your machines on the end of the finger-piece, as shown in this drawing?

Answer. The position of the raker in my machines varied at different times; that is, the position of his feet, and his attitude. Whilst the segment of a circle was used to brace the raker, his feet were

[751] more braced out by leaning against the segment of the circle. When I used the board which is described in the first good machine I made placed lengthwise the machine, and when this was used by the raker as a seat, his feet was often drawn up more under him; but the seat was at all times nearly over the cutter bar until the machines were made at Hagerstown; that embraced the change in the raker's seat.

Question. In the machines before those constructed at Hagerstown, was or was not the position of the raker over or on the end of the finger piece shown in the drawing?

[752] Answer. It was exactly over what is termed the finger piece in my machine, and it appears to be so in the drawing, as far as I can understand it.

OBED HUSSEY.

And the said Obed Hussey being further cross-examined on the part of the plaintiff in the said cause, he further deposes, answers, and says as follows:

Cross-question. Please describe the main frame-work of the first experimental machine you have named in your examination, and the mode of attaching the cutter-bar thereto.

Answer. The frame-work was composed of two sills at the bottom, [753] horizontal, about six feet long, more or less; on one end of these sills rose two or three posts; one post in or near the middle of the sills, and the other one or two; there were two posts, I think, in the first machine, at one end of the sills. These posts rose about two feet and a half or three feet; on top of these posts there was a top rail, which top rail was about half the length of the sills. The one sill, one top rail, and three posts, formed one side of [754] the frame of the machine, and there were two sides alike to the machine; these two sides were connected by several lateral cross-bars; one-half of the sills were occupied by the frame-work which contained the cog-wheels, gearing, and driving wheels. The position of the sills were about eight or nine inches from the ground. The platform on which the wheat fell when cut occupied the extended ends of the sill. This platform was composed of the cutter-bar and plank to the width of three or four feet. The position of the cutter- [755] bar was on the extended ends of the sills next to the frame-work. The part of the frame to which the gearing was attached was the front of the machine. The cutter-bar was bolted to these sills; I think the plank rested on the sills, but can't say now positively whether they were bolted above or below on the sills. The cutter-bar was so placed that the cutting apparatus was nearly on a range with the hind post in the middle of the sills. The seat of the raker in my first machine, if he sat at all, was on the frame-work; [756] but whether there was a rail framed in lower than the top rail for him to sit on, I can't now recollect. There were several cross rails, which were a part of the frame. That part of the frame might have been too high for the raker to sit on, and he may have merely leaned against it; but if he sat at all, he must have sat over the finger piece.

Cross-question. Did the platform extend across over the back end of the sills to the opposite side of the frame?

Answer. Yes.

[757] Cross-question. You have spoken of a canvass that was made to revolve; did *did* that extend across the whole platform?

Answer. That did not extend across the whole platform. It extended, as far as I can recollect, over between the two sills.

Question. Was your object to carry the wheat thus far, and then have it thrown off by the raker?

Answer. Yes.

Cross-question. Will you look at defendant's Exhibit No. 1, and say whether it is sufficient to understand the various parts of the machine?

Answer. I think I understand the construction of the machine from the drawing—the general construction; I could not make a [758] machine from the drawing, for it never was intended as a model for a mechanic to make a machine from; and drawings of that kind, however perfect, necessarily do not show all parts of the machine.

Cross-question. Is it not necessary, in the operation of your machine, for the raker to assist in gathering the standing wheat to the cutting apparatus and delivering it upon the platform?

Answer. No, because standing wheat will always come off itself.

Cross-question. Is not the wheat often in such a condition as to require assistance from the raker?

Answer. Yes.

OBED HUSSEY.

[759] Cross-question. Did you or not know of the existence of a machine constructed by Mr. McCormick, the plaintiff in this case, or have such a machine described to you or named, or have you seen any publication of such a machine prior to the year 1833?

Answer. Never, nor of any other person.

Cross-question. Have you ever been selling machines for reaping in competition with McCormick's machine, and are you now engaged in constructing and selling machines in competition with the plaintiff's machine?

Answer. I am engaged in constructing and selling reaping [760] machines, and have been ever since 1833. I don't understand the nature or bearing of the question. I have been selling machines without regard to other persons. If that is what is meant by competition, then I have been engaged in competition. Doubtless Mr. McCormick and myself have been trying to outdo each other; we have each, no doubt, tried to make the best machines.

Cross-question. Do you know whether or not the machines of Mr. McCormick, the plaintiff, have been sold or introduced in the same market as yours?

Answer. I believe that most people know that Mr. McCormick's

[761] machines are on sale in Baltimore, and I have heard of Mr. McCormick's machines being used in various parts of Virginia, and Maryland, and other places. I was called upon last evening by a farmer who wished to purchase one of my machines. He informed me, that, if he could not get one of mine, he would purchase one of Mr. McCormick's. Mr. McCormick's agent was waiting in the ante-room; as soon as I informed him I could sell him a machine, he went out and gave Mr. McCormick's agent an answer, [762] and bought one of my machines. He also told me that he had been using one of Mr. McCormick's machines for two years.

Cross-question. Have you, within the last few weeks, been bargaining with a person for one of your machines, who subsequently bought one of the plaintiff's machines; and, after that transaction, did you or not complain or ask about the transaction of Mr. Chenowith, the plaintiff's agent here?

Answer. I have not the most remote recollection of any such circumstances. I don't know, or now recollect, of any man who has called on me and afterwards purchased one of McCormick's machines. [763] Such circumstances may have occurred, and I have forgotten it. A person may have called on me and afterwards purchased a machine from Mr. McCormick's agent, but I don't recollect of an instance; and I don't recollect of ever having had such a conversation with Mr. Chenowith. I don't mean to say, as stated above, that the circumstances alluded to in the interrogatory may have occurred and I forgot it, but that a man may have called on me and afterwards purchased McCormick's machine without my knowledge.

OBED HUSSEY.

(*No.* 11.)

Obed Hussey, being by me first carefully examined and cautioned, [764] and duly affirmed according to law, to testify the whole truth, and being examined on behalf of the respondents, affirms and saith as follows, to wit:

That he resides in the City of Baltimore, in the State of Maryland; that his occupation is building reaping and mowing machines, and has followed said business for twenty-one years. Deponent is acquainted with the plaintiff, Cyrus H. McCormick, and one of the defendants, Dayton S. Morgan. Deponent has been previously examined in this case. Deponent has a part of his (the witnesses) reaping machines that divides the standing grain from the grain to be [765] cut. It forms a point in front to divide the grain; it curves out to press the standing grain from the end of the platform and the truck wheel, so that the machine may pass; it curves on the inside to carry the standing grain into the cutter to be cut. The grain on the outside of the divider is left standing, while the grain on the inside of the divider is pressed in and cut. That part of the

divider which deponent has above described, is composed of iron and
[766] wood in the machine exclusively for reaping; in the machine for mowing it is of iron. This part of the divider lays horizontally or nearly so. At the place where the grain is cut, it may be from three to four inches wide, and continues that width a short distance back, and this width is sufficient to divide the grain in deponent's machine. There is an upright part to this divider in deponent's machine; it rises nearly perpendicular from the platform; it commences near the point of the divider before described; it slopes back at an angle of from twenty-five to thirty degrees until it reaches
[767] to the height of nine inches or a foot above the platform, then it slopes down gradually backwards to about three feet further, and its whole length is about four feet and a half from the commencement of the divider; the upper edge of this upright is an irregular curve to its termination near the hind part of the platform.

It is placed near the centre of the divider, and nearly perpendicular, but inclines outwards. It is composed of wood; pine boards strengthened and supported by iron. The use of this board is to
[768] divide the cut from the standing grain, and to separate the tangled grain, and to protect the cut grain after it has fallen on the platform, and to divide it from the standing grain. This description of divider has been in public use, he is certain, since the year eighteen hundred and forty, or eighteen hundred and forty-one. Deponent has been manufacturing and selling machines containing this description of divider from 1840 or 1841 to present time. Deponent never made the bottom part wider than he does now. Depo-
[769] nent thinks that cleets have been nailed on the outside and hoops put on, making them considerably wider on the outside and pushing the grain much farther out, by other persons, but not by this deponent. About ten or twelve years ago, deponent made one machine, the upright board of which, over the divider, had its upper edge curved outward against the standing grain at least six inches farther than that on the ordinary machine.

That machine he believes was in public use. Deponent's impression is, that he has seen his machines with cleets nailed on; he has
[770] nailed them on himself, and hoops put on by farmers themselves; by hoops deponent means a bow nailed by its two ends. His impression is, that it has been ten years ago since he saw those bows put on his machines. Deponent's reaping machines, he would suppose, had been sold in nearly every State in the Union. A large number within that time have been sold in Virginia and Maryland.

Deponent knows that in the year eighteen hundred and forty-three, the plaintiff saw deponent's machine. Plaintiff and deponent
[771] were in the same field several days, and in different fields the same season, using their machines side by side, in cutting grain.

The machine used by deponent on the occasion above mentioned, had the divider deponent has hereinbefore described.

It has been as long as ten years since deponent first saw bows put on his machine as above described, and thinks he has seen them put on since.

Deponent sent his reaping machine to the World's Fair, held in London, England, in the year eighteen hundred and fifty-one, and was exhibited in the Crystal Palace in May, at the opening, and deponent followed it in the July following. The plaintiff had one of his reaping machines there.

[772] The sickle that McCormick had in his reaping machine was straight with a jagged edge, like the ordinary sickle.

There was a public trial between plaintiff's and deponent's machine at Mechi's Farm, several miles from London, before deponent got there. McCormick's machine was managed by a man sent from this country, who was a very experienced and competent man to work said machine; deponent's machine was managed by a person who was employed as a laborer in the Crystal Palace, whose duty it was to clean the machinery, and was inexperienced in the manage-

[773] ment of reaping machines. At that trial McCormick's machine had a preference over deponent's.

Deponent heard of another trial between said machines, while deponent was in France; both machines were managed by the persons who managed them on the first trial, with the addition of Mr. McCormick, the plaintiff, who was present at this trial. Does not remember ever having conversed with Mr. McCormick upon the subject of these trials. There were other trials between the said machines when deponent was present himself. The first of these trials was at Middleborough, in Yorkshire; deponent managed his

[774] own machine, and McCormick's man, whom he sent from America, and his London agent, Burgess, of the firm of Burgess & Key and Mr. Samuelson, the manufacturer, managed McCormick's. The decision of the jury was unanimous, in seven points out of nine, in deponent's favor.

The trial was before the Cleveland Agricultural Society of Yorkshire, and occupied two days; the first day was a very rainy day; deponent's machine was put to work first; it passed across the field several times, cutting successfully; it was then withdrawn, and McCormick's machine was started, and did not cut at all, owing, it was alleged, to the inclemency of the weather; for this reason it

[775] was proposed to adjourn the trial to a fair day, until the farmer who was the owner of the field, should say his wheat was in a good condition to be cut. The day adjourned to was a fair day; deponent's machine cut successfully on both sides of the field. McCormick's machine cut well on one side, but failed totally on the other side, and was ordered to be stopped by the judges. There was no premium offered; it was a trial simply to test the abilities of the two machines. McCormick's machine and deponent's, with which

[776] the above trials were made, were taken from the Crystal Palace, and returned to the same place after the trial.

The machines of McCormick's and deponent's were the only ones in the Crystal Palace, except one made by an English manufacturer on the same principle as deponent's, but which machine was never taken out and tried, to deponent's knowledge.

Before the same Cleveland Society, at the Cattle Show of the close of the harvest of the year eighteen hundred and fifty-two, there was another trial of reapers, deponent's, McCormick's, and others.

[777] On being asked what kind of a sickle McCormick used in his machine on this last occasion, says, I cannot be positive as to that particular machine, but I had no doubt it was the scalloped sickle; don't remember going close to the machine to examine it; it was a matter of conversation between the manufacturers and deponent that McCormick had made great improvement in his machine, by introducing the scalloped sickle into it, as differing from the one exhibited by him in the Crystal Palace. Deponent saw the scalloped sickle in McCormick's machine, either in the machine on the trial in question, or in other machines of his, in England.

[778] The plaintiff's counsel objects to so much of the above answer as states any conversations between the deponent and English manufacturers, and to all inferences deduced therefrom.

At the trial at the close of the harvest of the year eighteen hundred and fifty-two, before the Cleveland Society before spoken of, McCormick's machine was managed by his American manager. Deponent's machine was managed by an Englishman; there were other machines there, but these two were the prominent ones. The prize

[779] of the Society was awarded to deponent's machine, which was owned and exhibited by Mr. Palmer. The next trial in deponent's presence was in the year eighteen hundred and fifty-three, at Plymouth, England, in the early part of harvest; deponent's machine managed by himself, McCormick's machine managed by his American manager. The other, the identical machine exhibited by deponent in 1851, at the Crystal Palace, and sent from America and owned by an Englishman, and managed by an Englishman. The prize was awarded to deponent by acclamation. This trial took place before the Bath and West of England Agricultural Society.

[780] The next trial of deponent's machine was in the same year 1853, in July, before the Royal Agricultural Society of England. The machines present were McCormick's, Bell's, deponent's *deponent's deponent's* machine made by Wm. Dray & Co., of London, and several others, which being of little importance, deponent has forgotten them; McCormick's American manager managed his; Bell and his manufacturer and manufacturer's assistant, managed his; Wm. Dray managed his own, Hussey's machine, and deponent managed his own, and the prize was awarded to Bell.

The next trial was at the City of York, in the same year 1853,

[781] and by the same machines, so far as deponent can recollect, that was exhibited before the Royal Agricultural Society,

and managed by the same parties, as far as deponent recollects, with the exception of Mr. Dray, who deponent thinks was not present. The prize was awarded to Bell.

The next trial of machines was at Stirling, in Scotland, in the same year, 1853; the same prominent machines, viz., Bell's, McCormick's, and deponent's, and managed by the same parties as before, Mr. McCormick being present himself. The prize was awarded to Bell.

[782] The next trial took place at Blackburn, in Lancashire, the same year, before the Royal North Lancashire Agricultural Society. The machines were Bell's, McCormick's, deponent's, and others; they were managed by the same parties as before. The prize was awarded to Bell; a silver medal was also awarded to deponent, which he has since received. This was the last trial at which deponent was present, at the working of McCormick's machine in England.

Mr. Bell, whose machines took the prizes at the trials above related, was an inhabitant of Perth, in Scotland; a description of his [783] machine can be found in Loudon's Encyclopedia of Agriculture. Deponent means by jagged-edged sickle, that one side of the blade at the edge is cut similar to a single-cut file.

Question. Do you mean that the angles of these cuts extended the whole length of the sickle, or reversed, and if reversed, at what distance apart were they so reversed?

Answer. McCormick's reversed cut is in sections of about one inch; his sickles, that cut a uniform angle from end to end, was abandoned, as his patent will show, many years ago; deponent would not expect [784] to find a sickle of that kind in McCormick's machine for the last seven years, therefore did not stoop down when he was in London to examine it. Does not believe that McCormick has made a sickle of that description for the last seven years. Deponent has often examined McCormick's sickles in other machines, and have seen nothing but what he calls the reversed cut during the last seven years.

OBED HUSSEY.

Cross-examination.

Question. Was the first part of your testimony on pages 1, 2, and 3, and part of page 4, given in answer to questions propounded by defendant's counsel?

Answer. They were.

[785] Question. In the first part of your testimony, you describe a part of your reaping machine that divides the standing grain from the grain to be cut; is that description given from any model or drawing you have here, or is it given before the commissioner from memory?

Answer. It is altogether from memory, fresh from my shop, where

I can show a large number of machinery corresponding with that description.

Question. You say this description of divider has been in public use since the year 1840 or 1841; are we to understand that the
[786] dividers in the machines made by you since 1840 or 1841, have conformed exactly to the description given before the sentence above quoted occurs?

Answer. Exactly; every machine conforms to the description above mentioned, making the just allowance for accidental variations made by the workmen; deponent's design is and always has been to make them conform to that description.

Question. You say that hoops have been put on your dividers, making them considerably wider on the outside, and pushing the grain much farther out by other persons, but not by you. When was this first done?

[787] Answer. My impression is, that it was done by the farmers very soon after I commenced building machines in Baltimore, in the year 1838.

Question. In your former deposition, you state your impression that you commenced building machines in Baltimore, in 1839; will you state now when you did commence building them?

Answer. Thinks he commenced in the winter of 1838–'9.

Question. Was this use of the bow adopted by you, and if not, what was your reason for not adopting it.

Answer. I considered my divider sufficiently wide to press the
[788] grain so far that the machine would leave a good margin for standing grain, that being the object of the divider—hence I did not adopt the bow.

Question. You say about ten or twelve years ago you made one machine, the upright board of which, over the divider, had its upper edge curved outward against the standing grain, &c. &c. Do you remember in what year you made that machine, and to whom you sold it?

Answer. I do not.

Question. You state your impression is that it has been ten years
[789] ago since you saw those bows put on your machine. Can you remember the year when you first saw those bows on your machine, and what farmer had them on?

Answer. I cannot distinctly remember either, but I think I could in a short time find twenty who did it.

Question. What was the name of McCormick's American agent who managed his machine in the exhibition in England?

Answer. His name I cannot now call to mind.

Question. What acquaintance had you with him?

Answer. No other acquaintance than constantly meeting him at the cattle show and places where the machines were tried.

[790] Commission then adjourned to half past three o'clock, At which hour Mr. Hussey being examined, says: That

since he left the Commissioner's Office, he recollects the name of the man who managed the plaintiff's machine; his name was McKenzie, and on referring to his books ascertained that he commenced making machines in August, 1838.

OBED HUSSEY.

The counsel for the plaintiff was not present at the commencement of this examination, but appeared when deponent had proceeded in his examination as far as Mr. Mechi's farm, on the fourth page.

J. HANAN,
U. S. Commissioner.

(*No.* 12.)

[791] William A. Langworthy, being by me cautioned, and duly sworn to tell the truth, the whole truth, and nothing but the truth, deposeth as follows:

I reside in the City of Rochester; am 61 years of age and upwards; am a machinist, was once a watchmaker; am now at work at machinery of various kinds; I am acquainted with Hiram Moore of Michigan; first became acquainted with him in the Spring of 1836; I think it was when he came here to construct his harvesting machine; I think Moore was not a practical operative mechanic; he [792] took room down here on State Street to set up his machine; it was a kind of shanty or barn; he commenced in the fall and continued through the winter; he built two machines through the winter; I was employed by Mr. Moore to assist him in building the machines; there were others employed by Moore to assist; both machines were experimented with, and used in this country; the first was used on the parson's place, on the Lyel Road, a few miles west of the City; I think in 1837; don't know where the other was used; [793] can't say how many days were employed in experimenting with the first machine; I saw it operate only on one occasion. I did not witness the experiment with the other machine. The sickle on first machine was one continuous blade, ground to an edge like a sickle, and then cut like a sickle edge, transversely, alternately once in two or three inches, so as to hug the grain each way, and cut at back and forward stroke; this sickle was on the machine that cut a ten foot swath; I remember the manner in which Moore's machine [794] was constructed; I remember the manner in which the divider was constructed.

A model is here shown to the witness, and the witness is asked by the defendants' counsel the following question:

Q. Have you ever seen that model before, and if so, when and on what occasion?

A. I have seen it before; saw it at Canandaigua, on a former trial of this cause; it is a model of Moore's harvesting machine that I have spoken of.

The model is here marked by me, Exhibit "B."

Witness proceeds: The divider was a simple flat edge, it run for-
[795] ward of the sickle into the wheat, opening it to the right and left, throwing it back on the sickle and on the standing grain, making an opening sufficiently wide for the purpose, 6, 8, or 10 inches; can't tell the exact extent of the opening; it was a simple flat wedge on the first machine; it was discovered on experimenting with the first machine with the flat edge in tangled grain, that it would not operate properly, and on the second machine he erected a vertical wedge or board on the flat one, terminating at the same point
[796] with the flat one, so as to split the grain through, up and down.

There was a reel on that machine and reel-post. There was a reel-post each end of the reel, setting in the main side timbers of the machine, back of the sickle, sufficiently far back as not to interfere with the standing grain. Can't state exact distance; the vertical wedge was attached to the machine the same year that experiments were made on Lyel Road, before spoken of.

This witness on his cross-examination by the plaintiff's counsel, says:
[797] I have been examined as a witness in this cause before, and then testified as to the form of the sickle of Moore's machine.

Q. Did you not testify on that occasion that the transverse cutting for the teeth of the sickle were rounded one in 4 or 6 inches?

A. I don't remember how I testified. My present impression is, that the distance is not so great. I have looked at the model "B;" should think the divider had not been altered since the trial at Canandaigua. (Witness looks at the model again, and says), I should think the wedge had not been altered essentially.

[798] Q. Have you examined the model, so that you can now say that the divider has not been altered since you saw it in Canandaigua?

A. I can't say that it has been altered.

Q. As the model now is, has not the point of the divider been bent outwards since you saw it at Canandaigua?

A. I should think it had.

Q. Have you noticed now whether there is a slip of iron projecting inward upon the divider, that was not there when you saw the model at Canandaigua?

A. I think I saw the same iron on the divider at Canandaigua.

Q. Describe that iron?

[799] A. It was an iron band of hoop iron, around the edges of the wedge, and formed the point, so as to prevent its wearing at point and sides.

Q. Did you notice, whether in the machine itself, of which Exhibit "B" purports to be a model, the vertical part of the wedge was placed laterally in the centre of the flat part of it?

A. I think it was.

Q. What was the height of the vertical part of the wedge measured from the surface of the flat part?

A. Well, I think about a foot, more or less.

[800] Q. Was this machine so constructed as to cut the grain just below the heads of the grain?

A. It was.

Q. Did the sickle of this machine that you mentioned operate on a plate of iron?

A. I think not.

Q. How was the sickle prevented from vibrating up or down or vertically?

A. I think it was supported at either end by weights or styles to keep it to it—it had no support at the centre, but only at the ends.

Q. Was there any difference in that respect between the first machine and the second?

A. I can't say.

[801] Q. Do you recollect that the sickle in the second machine was in anywise supported, except at the ends?

A. I do not.

Q. How did those machines succeed in cutting the grain?

A. The first machine, which was the only one that I saw operate, did not succeed very well.

Q. Do you know anything of the success of the second machine?

A. I do not.

Q. You say the first machine did not succeed very well. Will you state wherein it did not work well?

A. A principal failure was the want of motion. The driving [802] wheel slipped on the ground, and would not draw up the machinery. That was the main difficulty. I don't now remember any other, except that the flat wedge did not succeed.

Q. Was the reel on that machine so calculated as to operate close to the sickle?

A. The reel was so arranged as to bring the heads of the grain over on to the sickle, and carry them back under the reel on to the platform, after being cut.

Q. Did the reel in revolving come down to the sickle?

A. It came near enough to do its work.

[803] Q. Will you state about how near?

A. It may be about six inches—not far from that, I should think.

On his redirect examination by defendants' counsel, the witness says:

The vertical and flat wedge came to a point as it entered the grain. The point of the projecting iron, and the point of the flat wedge on the model, has been bent outward as I stated, since I saw it at Canandaigua. Should think by accident, as it should stand straight.

W. A. LANGWORTHY.

Sworn, October 20, 1851, before L. FARRAR,
Commissioner, &c.

(*No.* 13.)

[804] Junius Judson, being by me cautioned and duly sworn, to tell the truth, the whole truth, and nothing but the truth, deposeth as follows: I am 38 years of age and upwards; I am a machinist by trade, and reside in the City of Rochester; I am now engaged in the business of a machinist. I am acquainted with Hiram Moore, of Michigan; first became acquainted with him in the fall of 1836. He was engaged here in building his harvesters, as [805] they were called. He commenced in the latter part of the fall of 1836, I think; am not certain that that was the year. I was employed by Mr. Moore in the construction of those machines, perhaps three months, can't say exactly. He built two machines. One of those machines was furnished and tried here. For the sickle we took a saw-blade, perhaps 4 feet long, and stripped it up from 1½ to 2 inches wide. We took three pieces for each blade. Then to hold them together, we took two pieces of thin band iron, and riveted the steel between them. We then ground the bevel back [806] from the edge about ⅛ of an inch, so as to leave the edges of the steel, that projected from the band iron, sharp. It projected about ⅛ of an inch. We gave it a sickle cut, the inclination of the cut to the direction of the edge, about forty-five degrees, and then reversed the cut once in 4 inches at right angles with the first cut, forming sections two inches in length, cut transversely, that is, the sickle cut 2 inches one way and then reversed, and cut 2 inches [807] the other way alternately, through the whole length of the sickle. We took pains to countersink the band iron, so that we could grind off and have a flat surface to the sickle on both sides. The sickle played in slit at the root of the fingers, where they were attached to the front timbers of the machine. The underside of the slit was faced with a piece of thin iron over each finger, to prevent wearing or chafing of the wood of the finger, as the sickle reciprocated. The ends of the sickle were attached to small slides or cross [808] heads that run upon a "V" way. The way was then set so that the sickle, when drawn tight, should rest upon the fingers, or the piece of band iron on the fingers, so as to hold the sickle from flagging. The object of the slit through the fingers was when the sickle took the grain by its reciprocating motion, would carry it sideways until it was stopped by the fingers, and then cut the grain off. The fingers were about 4 inches apart. The reel posts were morticed into the outside timber of the machine, about six [809] inches back of the sickle. Should think the reel was about thirty inches in diameter.

The model marked "Exhibit B," is here shown to the witness, and he proceeds to testify as follows: The model shown me is a substantial model of the machine I helped Moore build; it may vary in details, but the general principle is the same. The object

of the machine was for the purpose of cutting, threshing, and cleaning grain.

JUNIUS JUDSON.

Sworn, October 20, 1851, before

L. FARRAR,
Commissioner, &c.

(*No.* 14.)

George F. Barnett, being by me cautioned and duly sworn to tell
[810] the truth, the whole truth, and nothing but the truth, deposeth as follows:

I reside in Brockport; have resided there since 1827. I am engaged in the furnace and machine business, and the manufacture of agricultural instruments; am carrying on the business on my own account, in connexion with others. I superintended the mechanical department of the business; have been engaged at agricultural implements most of the time, since 1845. Prior to that time, I was a carpenter and joiner; worked at that business about 20 years; should
[811] think, before commencing the other business, 15 to 20 years. I have been acquainted with McCormick's reaping machines. In the year 1846, I superintended the construction of about 100 of those machines for Backus, Fitch & Co., at Brockport. McCormick was present occasionally, most of the time during the construction of those machines. The construction of those machines—that is, the 100 mentioned above—commenced about the month of February, 1846, and were completed for the harvest of that year. The patterns used at Backus, Fitch & Co.'s manufactory were duplicates of some
[812] got up at Seymour and Morgan's, under the superintendence of McCormick, as McCormick said. We constructed the 100 machines according to those patterns. As those machines were constructed, there was not room for me to stand up in the seat and do the raking, or while occupying the seat—that is, I could not stand and do the raking comfortably. I think an ordinary sized man could not stand up and do the raking comfortably in those machines. I am myself about a middle sized man; I weigh about 150 pounds,
[813] and am about 5 feet 7 or 8 inches in height. The seat passing between the raker's legs seemed to cramp him, and the cross piece was too near.

Q. Did you speak to Mr. McCormick on the subject of enlarging the space for the raker, so that he could stand up and rake comfortably?

A. I have spoken to him about it. I think he said he thought the space was large enough.

Q. Did he say anything on the subject, whether it was designed to have the raker stand up or not?

[814] A. I think he said the seat was designed for the raker to sit down on.

Q. Did you afterwards enlarge the space for the raker? And if so, how much and in what way?

A. I did enlarge the space for the raker in the machine that I superintended the construction of, by placing the cross piece farther forward from the raker; also by cutting out the seats somewhat more, allowing the legs of the raker to come nearer together. My impressions are, that the machines I spoke of superintending the manufacture of—that is, the 100 machines—were marked McCormick's im-
[815] proved reaper, patented January, 1845. I think that was the date, but may be mistaken as to that. I think also, the manufacturer's name appeared on them. I think the whole 100 machines were marked in that way, but can't say positively. I assisted in putting one of McCormick's machines in operation in 1845. I was engaged to do that by Backus, Fitch & Co. It was in the month of July, 1845. I went with the machine to Geneseo and Mount Morris. We tried the machine in those places. Mr. McCormick and
[816] Ansel Chappell were with me in trying that machine. That machine had a raker's seat; the seat was similar to the seats of the 100 machines that I afterwards superintended the making of. It was not attached exactly in the same way. The position of the seat was very nearly the same as in those, if I recollect right. The seat in that machine was a plank scolloped out on each side, with board nailed on behind the raker for him to sit on, with a cross piece in front of the raker. I had a conversation with McCormick as to
[817] when that machine was made. He said it was made in Cincinnati, by a Mr. Brown, I think. I think that machine was not marked when patented—not marked as patented at all, I think. I don't recollect exactly, it might have been marked. I think McCormick said Brown had made 100 machines that year. My impressions are, that he said they had been sold; don't know whether he said they had seats; can't say positively that he did say whether they had seats. I think he said they operated well. I used a ma-
[818] chine in the harvest of 1849, of the kind made by Seymour & Morgan for the harvest of 1850. The arrangement for the raker was similar to that of those made by Seymour & Morgan for harvest of 1850. There was no place on any of those machines for the raker to sit and do the raking. There was a box on the machine I used in 1849, covering the gearing similar to that on those machines made by Seymour & Morgan for harvest of 1850. The
[819] raker could not sit on that box and do the raking when the machine was in operation, because the position of the raker would have been so near the end of the reel that his arms would have come in contact with it. The box is also too far forward for the raker to sit on it and manage the machine.

Q. Is the arrangement for the raker on the machines constructed by Seymour & Morgan for the harvest of 1850, substantially the same with the arrangement for the raker on McCormick's machines?

A. I think they are not.

[820] Q. In what respect does the arrangement differ?

A. There is no seat for the raker on Seymour & Morgan's machine. I have seen Hussey's machine; there is a place for the raker to sit on those of Hussey's machines that I have seen. I saw the machine that McCormick brought to Brockport in 1844, which had no seat.

Q. Would there be any difficulty in putting upon such a machine as that, a seat similar to those afterwards used by McCormick, without changing the gearing or otherwise altering the machine?

[821] A. I should think there was not. I was foreman of Seymour and Morgan a part of the time they were constructing their machines for the harvest of 1850. Was their foreman from December, 1847, to April, 1850. The box over the gearing of a part of those machines was rounded off at the end, back of the raker.

Q. Do you know how it happened that those boxes were rounded off?

A. I do.

Q. Will you state the circumstances how it happened.

A. I was absent from the shop, at the City of Rochester. The [822] man that made the boxes by the piece, in my absence, took a box that was up stairs that was rounded off, and, as he said on my return, he supposed that I wanted them finished like the one up stairs. This answer was given me when I asked him why he had done it; as I had told him before that I wanted them made similar to the one, with that exception, as there was a plate of iron to be fastened on for the guards to pass through. I told him to make the [823] remainder of them square. He said he would take those off that he had rounded, if I said so. I told him I would see if we could get along with them as they were.

(The whole of the foregoing answer to the last question was taken, subject to an objection previously made by the plaintiff's counsel for irrelevancy, and on account of the hearsay statements contained in it.)

Q. Have you ever made a careful estimate of the cost of McCormick's reaper, as manufactured by Backus, Fitch & Co., under his direction; and if so, what was it?

[824] Objected to by plaintiff's counsel, on the ground of irrelevancy. Answer subject to objection.

A. I have; Mr. Ganson and I made an estimate on it.

Q. What did you make the whole cost of the machine, including the ordinary charges for making sales and putting the machine in operation, with an estimate of the average loss from the warrantees with which those machines were sold?

A. Sixty-four dollars and twenty-six cents.

Q. Does the paper now shown you contain the items of that estimate?

A. I think it does; the estimates contained in the paper shown me are, in my opinion, fair estimates.

[825] The paper referred to is here received by me, and by me marked Exhibit "A."

Q. What is the difference, if any, between the cost of McCormick's reaper and the reapers manufactured by Seymour & Morgan for the harvest of 1850?

Objected to by plaintiff's counsel as irrelevant, and answer subject to the objection.

A. I have not the estimate here; can't give the precise amount. Seymour & Morgan's cost more than McCormick's. My impressions

[826] are, that Seymour & Morgan's machine cost about $7 00 more than McCormick's; $7 00 to $10 00, or more.

Q. Was it necessary to have the iron across the back end of the gearing box, or something of that kind, to sustain the guards?

A. I think it was; it was necessary for convenience of shipping, so that the guards could be easily taken off and adjusted again, and so that it would be firm, and at the same time be easily changed.

Q. If one had seen Hussey's reaper in use, with the raker riding on the seat, would it in your opinion require anything more than or-

[827] dinary mechanical skill to make the seat used by McCormick, and place it on McCormick's machine?

Objected to by plaintiff's counsel, on the ground that the question calls for the opinion of the witness on a matter and in a case where opinion is not evidence; and that it is irrelevant. Answer subject to objection.

A. I don't think it would require anything more than ordinary mechanical skill.

This witness, on his cross-examination by the plaintiff's counsel, says: I have the machine McCormick said he brought from Cincin-

[828] nati, at Brockport, in 1845. I was with that machine when it was put to use; I worked on it some; I raked on it.

Q. State what was the difference, if there was any, in the construction of that machine and those made by McCormick in 1846.

A. That machine, the framework that surrounded the gearing was something in the form of a box, and the gearing was inside of this box, if I recollect right; the finger piece was attached on the rear part

[829] of this box. The reel post was a crooked one. I think the platform was similar to those of 1846. There was a bow on the outside to crowd away the standing grain, if I recollect right. There was no separating board on that machine; there was a dividing iron on that machine. I think there was a board, that stood up edgewise, commenced at or near the end of the divider and run back towards the back end of the platform; there was a crooked reel bearer attached near the back end of the platform, projecting forward, and running the left end of the reel—that is, the end opposite to the gear

[830] side of the machine. The tongue was framed into the front end of this box that enclosed the gearing. The machines of

1846 were similar to the models produced by the defendant, except that the model has a dividing iron on it, and those made in 1846 had none. My impressions now are, that the box that surrounded the gearing of the machine of 1845 was about 18 or 20 inches deep, and about three feet or so across; might not have been quite that; it may
[831] have been about 4 feet long. I think the seat was attached to the forward end of the box. I think there was a tenon on the plank of the seat, which passed through a hole in the forward end of the box, and was keyed on the outside through the tenon. The seat plank extended backward over the back end of the box, and was raised above it, of sufficient height over the finger piece where the raker sat; the finger piece being attached to the rear end of the box,
[832] on the seat plank where the raker sat. There was a board, I think, nailed on top, cross-wise of the seat plank, for the raker to sit upon; and to the outer and rear end of the seat plank there was bolted a cross piece or breast piece; this was to prevent the raker from falling forward. There was a foot board in addition to the finger piece; this was fastened to its place by a couple of crooked irons fastened to the end of the box; the finger beam not being wide enough for the raker to stand on. There was no board to the machine of 1845
[833] that we called a wheel board. On the machines of 1846, the object of the wheel board is to keep the straw from catching at obstructions on the machine and getting tangled down. The hundred machines that McCormick spoke of his having had made in Cincinnati, were made in the same season as the one which I made in 1845.

Q. Do you not remember that McCormick said in speaking of the machine he brought from Cincinnati, that it was made on a better model than the 100 he had spoken of?

[834] A. I don't remember it.

The plate of iron extending across the box, I suppose, was intended for the guards to pass through, and to support the guards. What the projection above the box was for, I do not know. I was not there when it was put on. I don't know that I ever heard it by him, the defendant, that that plate was to prevent the raker from sitting down on the box; don't know that I have any impression that I heard any such thing from them. In 1847, while I was foreman of
[835] the defendants, I think I heard the defendants say they were making machines in pursuance of a contract with the plaintiff, but am not positive; my impressions in 1848 were the same, that the defendants were making machines in pursuance of such a contract, but I don't know as I got it from them. The lever that works the sickle was placed on the outside of the box of the machine brought from Cincinnati in 1845.

Q. Did you ever hear the hands, any of them, state in substance
[836] that the iron plate on the back end of the box was made to project above it, with a sharp edge to prevent the raker's

sitting on the box; or anything like that in the presence of the defendants, or either of them?

Objected to by defendants' counsel.

A. I don't know that I ever did. I made the machine which I used in 1849; that is, I superintended the construction of it. It was made at defendants' shop.

Q. Do you remember that the foot board, of which you have spo-
[837] ken, was independent of the finger bearer, and that it had cleets on it for the purpose of keeping the feet of the raker in their place?

A. If my recollection is right, the foot board was fastened, as I before stated, with crooked irons independent of seat next to the finger piece, with cleets nailed on for that purpose. The gearing of the machine of 1845, I think, was not all immovable. I may be mistaken, however, about that. If any part was movable, I think the whole must have been, if the gearing was stationary. The fin-
[838] ger piece must be made so as it could be raised or lowered, so that the machine could cut high or low.

On his direct examination by defendants' counsel, this witness says: There were no dividing irons put on the machines manufactured by Backus, Fitch & Co., in 1846. There was no wheel board on their machines.

GEORGE F. BARNETT.

Oct. 17, 1851.

Exhibit A, referred to Geo. F. Barnett's deposition.

Estimated expense and cost of manufacturing McCormick's Reaping Machines, as made by Fitch, Barry & Co., during years '46, '48, '49, '50, as follows:

[839] Labor of making wood work, putting in gearing, and putting machinery together ready for use, .		$12 50
Lumber, ...		5 00
Castings, 212 lbs., at 3½ cts., ...		7 42
Wrought iron, besides wastage, about 160 lbs., at 4 cts., .		6 40
Boring and fitting castings, hanging wheels, and turning wrought iron, ...		2 50
Wrought iron work, to wit, blacksmith's labor, . .		3 50
Two sickles, 12, ...		3 00
Paint and painting, ...		1 25
1 band and buckle, ...		81
		$42 38

[840] Other expenses as follows:

Use of machinery, engine man, and wood, .	$2 50
Superintending and interest, . . .	4 00
Loss in warranty, say on an average, . .	3 00

Coal for use of blacksmithing, . . .	38	
Labor and expense in putting machines in work, on an average, ...	5 00	
Cost of procuring order and making sale, .	7 00	
		$21 88
		$64 26

No. 15.

The United States Patent Office.

To all persons to whom these presents shall come: Greeting:

[841] This is to certify that the annexed is a true copy from the files of this office.

In testimony whereof, I, S. T. Shugert, acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this twelfth day of October, in the year of our [L. S.] Lord, one thousand eight hundred and fifty-four, and of the independence of the United States the seventy-ninth.

S. T. SHUGERT.

WALNUT GROVE, STEELE'S TAVERN P. O., AUGUSTA, VA.

TO THE COMMISSIONER OF PATENTS:

Dear Sir,—In further "setting forth the grounds for asking an extension of my patent for a Reaping Machine, which bears date the [842] 21st day of June, 1834, in conformity to the 18th section of the Patent laws (19th section of your Circular), and in furnishing a statement under oath, of the ascertained value of the invention, and of my receipts and expenditures," &c., it may, perhaps, be best to give a short history of the origin and progress of this improvement.

In the summer of 1831, my father (Robert McCormick), who patented a hemp breaking machine and a hydraulic machine in the [843] year 1830 or '31, and who died on the fourth of July, 1846, constructed a machine for cutting grain upon a principle entirely different from mine, and on which he had made experiments years before, and by his experiments in the harvest of 1831, he became satisfied that it would not answer a valuable purpose, notwithstanding it cut well in straight wheat.

Very soon after my father had abandoned his machine, I first conceived the idea of cutting upon the principle of mine, viz.: with a vibrating blade, operated by a crank, and the grain supported at [844] the edge while cutting, by means of fixed pieces of wood or iron projection before it. (I think these pieces were of iron in 1831, but if not, iron was used for them certainly in the harvest of 1832.

A temporary experimental machine was immediately constructed, and the cutting partially tried, with success, in cutting without a

reel, a little wheat left standing for the trial, whereupon the machine was improved; and the reel which I had in the meantime discovered, attached, and soon afterwards (the same harvest), a very successful
[845] experiment was made with it, in cutting oats, in a field of Mr. John Steele, neighbor to my father.

The machine, at the time of this experiment, contained all the essential parts that were embraced in the Patent of June 21st, 1834.

It had the platform, the straight sickle, with a vibrating action by a crank, the fingers or stationary supports to the cutting at the edge of the blade, and projecting forward into the grain (the double and counter action from the crank, as patented, was abandoned, on being further tested), the reel, and the general arrangement by which the
[846] machine was (about) balanced upon two wheels, perhaps nine-tenths of the whole weight being thrown upon the one behind the draught, thereby attaching the horses in front, and at one side, without the use of a separate two-wheeled cart, for the purpose of controlling the running of the machine, and at the same time causing the machine (upon its two wheels) to accommodate itself to the irregularities of the ground, which construction I claim (and which Hussey adopted).

From the experiments of 1831, until (for) the harvest of 1840, I
[847] did not sell a single reaper, except one, which I afterwards took back, although during that time I had many exhibitions of it, and received favorable notices of those exhibitions, but experience proved to me that it was best for the public as well as myself that no sales were made, as defects presented themselves which would have rendered the reaper unprofitable in other hands.

From time to time, a great many improvements were found necessary, requiring a great deal of thought and study. Sometimes flattered, and at others discouraged, and at all times deeming it
[848] best not to attempt sales, either of machines, or rights to manufacture, until satisfied that the reaper would succeed well, and the great variety of situations in which it was necessary to operate in relation to the condition of the grain and ground, together with the short time in each year for experimenting, and also the failure of some crops, added much to the difficulty and delay in introducing and completing the reaper.

I was not sufficiently satisfied of its being a useful machine, to patent the reaper, until the year 1834, its construction and proportions having been imperfect, requiring much effort to make them,
[849] while light, yet simple, strong, and durable, and the cutting apparatus being defective, on account of liability to choke and get out of order, all which defects had to be corrected by a series of experiments, and often (perhaps generally) the result of but one experiment for the same object could be fully tested in one harvest. The cutting, indeed, proved not to be sufficiently certain, to be relied on in all situations, until I invented the improvement in the "fin-

gers" (or supports to the cutting), and reversed the angle to the
[850] teeth of the sickle, as described, and patented January 31st, 1845, in connection with the improvement in the bearers, which improvement, dispensing with the under part of the fingers (under the sickle), on which blades, grass, &c., were liable to hang, and choke the machine, simplified and perfected the cutting apparatus.

In 1839, I worked a reaper in my father's harvest, having then added the said improvement on the fingers, with great success; which reaper, after giving public notice, I exhibited about the close of harvest, in cutting oats for Mr. Joseph Smith, of said County of
[851] Augusta, to the delight of a large number of farmers present. But one farmer (Mr. Abraham Smith) of those present, however, ordered a reaper for the harvest next year; as I did not then feel that it was safe to warrant its performance. But I published in a Richmond paper the account given of that exhibition by the spectators, which induced two farmers from James River to call on me, who unconditionally applied for two reapers, but I finally concluded to send but one (they being neighbors); which one, and the one engaged at the exhibition, were the only reapers disposed of
[852] for the harvest of 1840, and they failed to operate well. The teeth of the sickle were made coarser than they had been, and all cut in one direction, as they were playing in groves in the fingers, the blades of the wheat were drawn into the groves, and so lodged on the under side of the fingers, as to choke the machine, especially in damp wheat. Those gentlemen could, of course, say nothing in favor of the reaper that year, and they failing, all that
[853] I could do for it the next (1841), was to correct the defects in those two machines. But the James River farmer (Mr. Sampson), who has since purchased two in different years, declined having anything done to his at that time. Accordingly, I then put a new sickle into Mr. Smith's machine, having the angle of the teeth reversed on the edge every one and a half inch (about) alternately, so as to cut equally in both directions; and the machine then performed so satisfactorily, that in addition to Mr. Smith's certificate, I warranted the performance of the reaper in every respect; and
[854] from that account, upon these terms, sold, for the harvest of 1842, seven reapers, and they all gave satisfaction, allowance being made for defects, which I had afterwards to correct, by adding further improvements to them, &c.

From the certificates given of the operations of the reapers used in the harvest of 1842, together with a strong guarantee, twenty-nine were sold for the harvest of 1843. Still considerably improved, having a fly-wheel attached to the crank, and some further additions, which gave general satisfaction, though further alterations had to be
[855] given to them, and but 28 of them were ultimately paid for. Subsequent to the harvest of 1843, on being applied to by

Mr. James R. Kite, of Clarke County, Virginia, who had certified that he had cut 175 acres of wheat with his reaper (see certificate), I sold to him the right to supply with the reaper, until the expiration of the original patent, eight counties around him, for which I received of him thirteen hundred and thirty-three dollars; and I sold it to Colonel M. Tulwiler, of Fluvanna County, Virginia, near neighbor
[856] to General Cocke, who had used one, the right to supply with the reaper, for the same time, that part of Virginia situated south of James River, and of the Blue Ridge, for twenty-five hundred dollars (giving time for payments). I sold to J. Parker, of Richmond, Virginia (machine manufacturer), who, I think, had witnessed the trial of my reaper, near Richmond, with "Hussey's," the right to supply with the reaper, for the same time, five counties, for which, I think, I was to receive $500, but did only re-
[857] ceive some $200 or $300, and, at his death, at the request of his executor, cancelled the contract. I have no account before me, that will show the precise amount. I also sold, for the same time, on application to me, the right to supply with the reaper the County of Washington, Indiana, and a County in Michigan, for $200 each.

For the harvest of 1844, 50 reapers were sold, 8 of which were sent from the Virginia manufactory to other states—one to New
[858] York, one to Wisconsin, one to Missouri, one to Ia., one to Ohio, one to Illinois, and two to Tennessee—but four of which reached their destination in time for the harvest, but six were ultimately paid for at reduced prices. And, during the harvest of 1844, after attending to the harvest in Virginia, I went to Western New York, Wisconsin, Illinois, Missouri, and Ohio, to attend to the introduction of the reaper. At Brockport, New York, I sold one reaper for $75; sold two county-rights, to manufacture, for $100 each, to Parkis, Fitch & Co., and contracted with them to manufac-
[859] ture 40 reapers for four other counties, for the harvest of 1845, and to pay me a patent fee of $20 for each one sold (they having the exclusive right to sell in said counties); but they failed to manufacture any reapers under this contract, nor did they give me notice of the failure until I arrived there, in the harvest of 1845, with an improved reaper, taken from Cincinnati, which reaper did not *do* even then pay expenses. After selling the reaper sent
[860] to Wisconsin for $80, at 12 months (if not mistaken), I sold to Mr. McCoy, of Southport, the right to supply with the same, until the expiration of the original patent, four counties, for $1000 on time, but which contract he never complied with, and which was afterwards cancelled without my receiving anything as indemnity. The reaper sent to Missouri also performed well on trial, (arriving late,) and I contracted with Henry Burr, Esq., of Cooper County, to manufacture, and pay my fees, on sales, of $20 each.
[861] Under the contract he built 20 reapers (badly, I suppose), stated that he had received unfavorable reports of their ope-

ration, except four, and I have not yet received anything for any of them, and doubt whether I ever shall.

At Cincinnati (Ohio) I contracted with Mr. A. C. Brown (a manufacturer of machinery) for the manufacture of 200 reapers, for the harvest of 1845, provided that orders could be obtained in time for that number, and to pay my patent fees on sales of $20 each. In consequence of experimenting against my advice in the manufactory,
[862] and bad management in other respects, he having undertaken about 150 machines, did not get them completed in time for the harvest, failed to give the necessary attention to them, and, on the whole, failed to do well—though admitted by himself (and perhaps all others) to be his own fault. He, however, ultimately settled the contract with me by his note for $1945, payable September 1st, 1846, which has been paid by a subsequent contract for the manufacture of 100 reapers for me, at $60 each.

[863] During the spring of 1845, I also sold to A. C. Brown my right to supply with the reaper 16 of the best wheat counties in Ohio, for four harvests, for $1900, payable in three equal instalments, on the 1st of September, 1846, 1847, 1848, which sale I proposed to said Brown, in January last, to cancel without consideration, he having then neither paid anything on the same, nor done anything of consequence in supplying said counties with the reaper, but he declined cancelling.

[864] For the harvest of 1845, I had also constructed the first reaper substantially on the plan as patented on the 23d of October last, which was taken to New York, as before stated, for exhibition (see S. J. Mill's certificate), and I then further contracted with A. Fitch & Co. (Backus then out of the concern) to manufacture 100 reapers for Western New York, for the harvest of 1846, and with Seymour, Morgan & Co., of the same place (Brockport), for 100 for the prairie country.

For the harvest of 1845 fifty reapers were also manufactured at
[865] this place, and sold, some of which were sent to Carolina, and some to Maryland, and some not paid for. And for the harvest of 1846, seventy-five were built here; 12 of which were sent to the West, and arriving too late for the harvest, have since been sold for the last harvest. Some 15 of the seventy-five remain unsold yet, and others were sold at reduced prices—the workmanship not having been executed so well as previously, in consequence of my absence, the protracted illness and death of my father, &c. Of
[866] the 100 reapers built by Fitch & Co., of Brockport, for the harvest of 1846, only about 30 were finally sold—that was in consequence of the harvest being in a very unfavorable state, together with prejudice, want of experience, some bad sickles, &c. From that contract I have yet received nothing, having been interested in the manufacturing, and doubt whether I shall, except that I sold 23 of (25 of) the machines in Ia., for the last harvest, with some

[867] profit. For 75 of the 100 built by Seymour, Morgan & Co. I paid about $58 each, and sold them in the West; and for 20 of the remaining 25 they have paid me $20 each as a patent fee, and may yet pay the same for two or three others, but not certain.

For the harvest of 1847, 35 reapers were built here, 13 of which have been sold, and the remainder on hand—which was caused, in part as stated, by want of sufficient attention previously, and which [868] prejudice can only be removed by effort. And 212 reapers were also manufactured by Seymour & Co., of Brockport, for the harvest of 1847, and disposed of on orders in form as are accompanying this, addressed to Seymour, Morgan & Co., from the prairie country. 100 reapers were also disposed of by Messrs. Gray & Warner, of Chicago, W., and 40 by D. J. Townsend, of Kendall County, Illinois, on like orders, for the harvest of 1847. Adolphus Macomber, of Livingston County, New York, paid $200, and agreed [869] to furnish me six reapers for the last harvest, for all my right in the reaper to supply his county with the same, but did not complete the six reapers in time for *for* the harvest, and I afterwards agreed to cancel my contract with him, allowing him to sell reapers in the county, and pay patent fees on sales, of $22 50 each—he to receive a credit for the $200 advanced, as reapers were sold; only two having been sold by him, but they much approved.

I also had manufactured by A. C. Brown, of Cincinnati (as [870] stated), for the harvest of 1847, 100 reapers, for which I paid him on delivery $60 each, and I gave my brother an interest of one-third part in that contract, to induce him to attend to the manufacturing at that place, which he did. Some 12 or 15 of these machines are yet unsold, and others have been sold at reduced prices. And as the materials put into them were not so [871] good as should have been, and they sold on orders like those referred to, and at the same price, some failures of sales may be expected.

For the next harvest, I have contracted for the manufacture of about 900 reapers, provided that orders can be obtained for that number in time to be manufactured; 100 of D. J. Townsend, on terms about the same as those on which he contracted for the last harvest; 500 sold by McCormick & Gray (myself and C. M. Gray, of Chicago), at Chicago, on like terms; and 300 by the Brockport Companies (Seymour & Co. and Fitch & Co.), paying patent fees on [872] sales. There will probably be no reapers manufactured at this place for the next harvest. I design, as far as practicable, and as may be necessary, to have those in use from this place repaired for the next harvest, as the want of a very little attention may prevent their operation, which may prevent the sale of others, &c.

A. C. Brown also paid me $30 as a patent fee for the sale of a reaper for the last harvest.

[873] Now as to my receipts and expenditures, showing the "loss and profit" realized, the following is as near as I can get to a correct account (in addition to the foregoing).

By reference to my account with my father, I am there credited by $2,440 as the full amount of my interest in the manufacture of the reaper at this place (when they have sold at $100 at the manufactory) up to the close of the harvest of 1845. By agreement with my father (and afterwards provided for in his will), $15 was

[874] made due me as a patent fee on each sale made of the 75 reapers built for the harvest of 1846, and by which I expect to realize about $900 for the 60 sold, and no more.

For the 35 reapers manufactured at this place for the last harvest by my brother and self, I have, of course, not realized anything, and it is doubtful whether I shall.

On the said contract with my father, I am also charged with $450, as the cash cut off by reapers (8 of which were those sent off to

[875] other states in 1844), and $75 for another one: the sale of these, I think, did not do more than pay expenses, if so much; 2 not paid for.

The Cincinnati contract for 1845 I have stated as settled at $19 45. And from my contract with the same, when for 1847 (which was managed by us together), making due allowance for expenses of repairs which have to be made good, machines sold at reduced prices, and others not sold at all, and some may be in

[876] addition to commission for orders, $5; transportation, say $8; seeing to starting the machines (by agents) without collecting, &c., say not less than $10. I think $1200 to $1500 is as much as I can calculate to realize from two-thirds of the contract.

The 75 reapers taken from Brockport to the West in 1840 were sold at $115 (each), payable 1st Nov., deliverable at navigable points, guaranteed as aforesaid, if all paid for, the profits upon these

[877] would probably be about $35 each, deducting charges, com. for orders, transfers, alterations in harvest, collection, &c., but under $2000 of these amounts are yet unpaid, and I doubt not that some of them never will be. I should not calculate on more than $2500 from the 100 reapers made by Seymour & Co. for 1846. For the 212 reapers sold by Seymour & Co. for the harvest of 1847 on orders in form as the one referred to by my contract with them, I

[878] am to receive 35-120 of the amount of the sales as fast as collected, I to furnish the orders (for which I paid a commission of $5 cash), and they to ship, collect, &c. I believe that notes were taken for almost 200 of these machines. But making due allowance for bad accounts, and other contingencies, suppose that for this contract it would be enough to say $5,500.

For the 25 reapers taken from Fitch & Co. to the West for 1847,

[879] I paid $60 cash at the manufactory, and sold 23 of them on like terms as others, the profits on which, making all due allowances, may perhaps be set at $700.

For the 100 reapers manufactured by Gray & Warner, of Chicago, for the last harvest, as also the 40 by D. J. Townsend, by my contracts, I am to receive on sales a patent fee of $30 each; and I believe all have been sold.

[880] Of course nothing certain can be known of the result of the present year's operations until after the next harvest. By fire or a failure of the crop of wheat, it might result in loss, instead of profit. Former failures in contracts also show that expectations may be very much disappointed in relation to them. In addition to the failures before mentioned, I may add that D. J. Townsend had contracted to manufacture 200 reapers for the last harvest, if orders could be obtained in time. Seymour, Morgan & Co. had also contracted to manufacture 250, if orders were received in time. Seymour, Morgan & Co. and Fitch & Co. pay for the

[881] next harvest patent fees of $20 on some sales, and $22 50 on others, in N. York, $105 being price of the reaper there, 25-120 of sales made in the Wabash Valley, Ia., and 27½-120 of sales made in the eastern part of the prairies of Michigan, when collected, the only territory provided for the Brockport manufacturers.

[882] The foregoing embraces, as nearly as I can give it at present, a full and complete account of my operations with the Reaper to the present time, and in it no allowance whatever is made for my time and expenses, which (latter) have been very heavy, amounting, during the whole time, including all outlays for advertising, travelling (and boarding) expenses, &c., to certainly several thousand dollars, but the exact amount I cannot pretend to.

[883] In relation to the profits realized from my patent of June 21st, 1834, it will have been observed that for 12 years after the first discovery and practical operation of my principle contained in it, and 9 years after the patent was granted, and until I had made other important and indispensable improvements, for which a second patent was granted, I not only derived no profit from it, but actually spent a great deal of time, study, and labor, and much money, in improving the machine from time to time, so as to make it useful to the public, as well as profitable to myself.

[884] And, again, in getting into the heavy wheat of the prairies, with considerable hazard, too, in my efforts to introduce it, warranted, as it was necessary to do to effect sales, I found that further improvements would be necessary safely to introduce it to any considerable extent, and, accordingly, those improvements, embraced in my third patent, were made, and not a year has passed since, indeed, without my having made additional and important improvements in the details, as also others before, not the subject of a patent, so that, in fact, all profits have resulted directly from my

two last patents, and, therefore, as I should suppose, the greater part of the profits, at least, should be attributed to them, and but the smaller part to the original patent.

In relation to the "ascertained value" of this machine, although,
[885] as you remarked to me, there can probably be no question of that, I may just say that a great many farmers have certified that it will pay for itself in a single harvest, and, I have no doubt, that such is the fact, estimating its saving of grain as well as of labor.

This, it will readily be observed, must be the case if the warrant be fulfilled, and the low price at which it is sold, together with the great saving realized from its operation, places it within the reach of any farmer who would need it, two or more neighbors uniting
[886] in the purchase of one, as is often the case when small farmers. Moreover, I would not be willing to, nor have I found any manufacturer who does sell any threshing machines in the county, at the common price of the same, warranted as I warrant this machine; and I have never yet sued a man for the price of a reaper.

By consolidating the manufacturing as much as practicable, and thus taking the better care to have well-executed workmanship, as will be the case with my arrangements at Chicago, where expensive
[887] machinery has been erected for the business, I believe the interest of the manufacturer and purchaser may be mutually promoted, and I do not believe that the interest of the public would be injured at all by the extension of my patent for seven years, which may be necessary to protect my other patents against evasion, without being improvements, and which might also protect the public against humbugs, such as some I have already witnessed, much effort having already been made to evade (as well as to supersede) my patent, but without success, further than to deceive and impose upon the public to some extent.

[888] I respectfully refer you to Vol. 3, No. 5, and page 306, of the "Mechanics' Magazine" (May No.), for my notice of "Hussey's Machine" ("rotating" in this notice should be vibrating, and is corrected in another No.). I did not interfere with him because I did not find him very much in my way, calculated to beat him without, and supposed it might be best to do so.

I have attempted to make out a plain statement of facts, as you suggested to me, without consulting anybody, and further will only
[889] respectfully refer you to my representative in Congress, (Gov. McDowell), who can give you any satisfaction as to the character of the testimony presented.

Hoping that you will consider me entitled to an extension of my patent,

I am, very respectfully, Your obt. servt.,

C. H. McCORMICK.

HON. EDMUND BURKE.

COUNTY OF AUGUSTA, State of Virginia, to wit:

On the first day of January, 1848, before the subscriber, a justice of the peace for said county, personally appeared the within-named Cyrus H. McCormick, and made solemn oath that the foregoing statement is true.

JAMES HENRY,
J. P.

(*No.* 16.)

[890] *Extracts from bill of complaint.*

Your orator further shows that by the summer of the year 1845, he had invented the improvements described and claimed in the specification accompanying the said letters patent of the 23d day of October, 1847, and that the said defendants did, during the winter of the year 1845, and during the year 1846, prior to the summer thereof, at Brockport aforesaid, manufacture and sell about one hundred reaping machines, containing the said improvements de-
[891] scribed and claimed in said letters patent of the 23d day of October, 1847, and constructed substantially in conformity therewith, and known as "McCormick's reapers;" which said one hundred reaping machines were made and sold under a license given by your orator to said defendants to make and sell them, and for which license the said defendants paid to your orator, according to his best recollection, the sum of twenty dollars upon and for each of said reaping machines; and that the said defendants did, during the winter of the year 1846, and during the year 1847, prior to the
[892] summer thereof, at Brockport aforesaid, manufacture and sell about two hundred reaping machines, substantially identical with the said one hundred reaping machines, and also known as "McCormick's reapers," which said two hundred reaping machines were also made under a license given by your orator to the said defendants to make and sell them, and for which license the said defendants paid to your orator, according to his best recollection, about the sum of thirty dollars upon and for each of said two hundred reaping machines, the purchase-price of which was paid to said de-
[893] fendants; which three hundred reaping machines so made and sold by said defendants were, as your orator believes, nearly all of them sold to be used in the Western and Northwestern States. And your orator further shows that during the winter of the year 1847, and during the year 1848, prior to the summer thereof, the said defendants did, at Brockport aforesaid, manufacture and sell, according to your orator's best recollection and belief, about one hundred reaping machines, substantially identical with the said three hundred so previously made by said defendants, and also known as "McCormick's reapers," which last-named one hundred reaping
[894] machines were also made under a license given by your orator to said defendants to make and sell them, and for

which license the said defendants paid to your orator, according to his best recollection, upon and for each of said last-named one hundred reaping machines, the purchase-price of which was paid to said defendants, the sum of twenty-two dollars and fifty cents upon and for each machine sold in the western part of the State of New York, the sum of twenty-five dollars upon and for each machine sold
[895] in the State of Ohio, and in the Wabash Valley, in the State of Indiana, and the sum of twenty-seven dollars and a half upon and for each machine sold in Northern Indiana and Michigan; the western part of the State of New York and the States of Ohio, Indiana, and Michigan, being the only parts of the United States in which the said defendants had such license to sell said machines for the harvest of the year 1848; and your orator having for the harvest of the year 1848, established a manufactory of such reaping
[896] machines at Chicago, in the State of Illinois, and sold five hundred of them containing said improvements claimed in said letters patent of the said 23d day of October (1847), at that place for that harvest, and having received a fee of thirty dollars upon and for each one of one hundred of his said reaping machines containing said improvements claimed in said letters patent of the 23d day of October, 1847, made and sold by a license of your orator at
[897] Chicago, for the harvest of the year 1847, and having also received a fee of thirty dollars upon and for each one of about forty of his said reaping machines containing said improvements claimed in said letters patent of the 23d day of October, 1847, made and sold, by a license of your orator, in Illinois, for the harvest of the year 1847, and having also received a fee of thirty dollars upon and for each one of about one hundred of his said reaping machines, containing said improvements claimed in said letters patent
[898] of October 23d, 1847, made and sold by a license of your orator in Illinois, for the harvest of the year 1848.

And your orator further shows, according to the best of his recollection and belief, that during the winter of the year 1845, and during the year 1846, prior to the summer thereof, licenses of your orator, at Brockport aforesaid, other than the defendants, made, and during that time and in the years 1846 and 1847, sold about eighty of said reaping machines, containing said improvements, claimed in
[899] said letters patent of the 23d day of October, 1847, for which license your orator received compensation; and that during the winter of the year 1847, and during the year 1848, prior to the summer thereof, licenses of your orator, at Brockport aforesaid, other than the defendants, made and sold about seventy-five of said reaping machines, containing said improvements claimed in said letters patent of the 23d day of October, 1847, and for which license your orator also received compensation. Your orator further
[900] shows, that during the winter of the year 1848, and during the year 1849, prior to the summer thereof, the defendants,

at Brockport aforesaid, made and sold, with the permission of your orator, a few reaping machines, substantially identical with the said four hundred so previously made by the defendants, and also known as "McCormick's reapers," for making and selling which machines the said defendants agreed to compensate your orator. And your orator further shows that, between the summer of the year 1848 and
[901] the summer of the year 1849, he made at Chicago, in the State of Illinois, about fifteen hundred reaping machines, containing the improvement lastly claimed in said letters patent of October 23, 1847, over fourteen hundred of which reaping machines were sold by your orator during that time, at Chicago aforesaid; and that during the same period, about one hundred and fifty reaping machines, containing the improvement lastly claimed in said letters patent of October 23, 1847, were made and sold by license of your orator, and for which he received compensation. And your
[902] orator further shows that he has now nearly completed, at Chicago aforesaid, about sixteen hundred reaping machines, containing the improvement lastly claimed in said letters patent of October 23, 1847, all of which have been made since the summer of the year 1849, and all of which your orator intends to sell in season for the harvest of the year 1850; and your orator states and shows that if the said defendants shall be permitted to sell the reaping machines hereinafter described as now being in the process of con-
[903] struction by them, your orator's sale of the said sixteen hundred reaping machines so being made by him will be materially injured.

(*R.*)

E. Larkin Brown, being duly sworn, to tell the whole truth, in answer to all questions asked him within his knowledge, deposes, and says, that he is forty-two years of age, that he resides in Schoolcraft, in the County of Kalawasco, Michigan, and is not acquainted with either Cyrus H. McCormick, plaintiff, or William H. Seymour, or Dayton S. Morgan, defendants, and that he has resided for the last past nineteen years at his present place of residence; that he has been acquainted with Hiram Moore, of China Prairie, in said County
[904] of Kalawasco, for the past nineteen years, that he has known him as the inventor of Moore & Haskell's Harvesting Machine, for fifteen or sixteen years. I think said Moore has made five of said harvesting machines; three of said machines now in existence. I have examined Cyrus H. McCormick's reaping machine, and have seen it at work. I have noticed the dividing iron on said reaping machine and understood its operation. I also understand the operation of Moore & Haskell's harvesting machine; in said harvesting
[905] machine the divider sides is a solid framework, projecting forward to the forward circumference of the gathering cylinder, and about two feet forward of the cutting apparatus, while in

McCormick's reaper, this side is entirely open forward and back of the cutting apparatus, more than two feet. Both the harvester and the reaper have a piece of wood projecting forward for dividing the grain to be cut from that to be left standing. McCormick's reaper has a dividing iron which bears the grain inward and upward within the power of the reel in operating Moore & Haskell's machine, [906] the grain sometimes clings to the frame that supports the reel; and I have known it to pull up the grain by the roots. I have heard Hiram Moore speak of a suit now pending between the parties hereinbefore mentioned. Hiram Moore stated to me in a conversation which I had with him, in the month of November last, on my farm, in the town of Schoolcraft, in the County of Kalawasco, Michigan, that he had a written proposition from Seymour & Morgan, the defendants above stated, for the purchase of an interest amounting to one fourth, in Moore & Haskell's Harvesting Machine; [907] that they propose to pay him a sum not less than five thousand dollars, and I now think more than that sum, the amount I do not recollect positively, but it was a definite amount, and I stated before it was not less than five thousand dollars. He also stated, that a part of the consideration connected with said proposition, was the right on the part of said Seymour & Morgan to use his, said Moore's sickle, in the construction of their reapers. This [908] last part of the proposition with regard to the use of the sickle, is according to my best recollection.

Hiram Moore also stated to me in said conversation, that it was a part of the consideration in said proposition from Seymour & Morgan aforesaid, that he, said Moore, was to pursue his application to Congress for a renewal of Moore & Haskell's patent for the harvesting machine, until he had expended a sum not exceeding two thousand dollars. Hiram Moore has repeatedly stated to me in conversation, that all the main features in McCormick's reaper, were in his, said Moore's, invention; and he also stated to this deponent, that the [909] reason why he had not prosecuted persons for an infringement on his patent, was the fact that he wanted to procure first his renewal of the patent for Moore & Haskell's harvesting machine. This deponent further states, that on the 18th of present month of October, I had a further conversation with Hiram Moore, in which said Moore asked, if McCormick intended to take some depositions here in his suit now pending with Seymour & Morgan aforesaid, and I told him that McCormick so intended; and he, said Moore, then asked me what McCormick was going to prove by me, [910] this deponent; and I then told him that McCormick intended to prove the proposition that Seymour & Morgan had made to him, said Moore. After a few moments' reflection, he, said Moore, then stated that McCormick's intention of taking such testimony was to show interest in him, said Moore. This last conversation was had

near the school-house, in the village of Schoolcraft, and further this deponent saith not.

E. LARKIN BROWN.

(*S.*)

Andrew Y. Moore, being duly sworn, to tell the truth, the whole truth, in answer to all questions asked him within his knowledge,
[911] deposes, and says: That he, said deponent, is forty-nine years of age, a resident of Schoolcraft, in the County of Kalawasco, aforesaid, but not acquainted with either of the parties to this suit. I have resided in Schoolcraft for eight years last past, and I have been acquainted with Hiram Moore for the past sixteen years, and became acquainted with him as the inventor of Moore & Haskell's harvesting machine, and this deponent states, that Hiram Moore, in the year eighteen hundred and thirty-six, cut for him, this deponent, three acres of wheat with the harvesting machine aforesaid, being
[912] the first acre that was ever cut with said machine. From that time to the present date, this deponent has been familiar with the said harvesting machine's operations. In the year eighteen hundred and forty-two, I contracted with Hiram Moore to run, and did run his harvesting machine through the harvest, and from that time to eighteen hundred and forty-five, I run a harvesting machine or machines for said Hiram Moore, and in eighteen hundred and forty-five I built a harvesting machine for said Hiram Moore and myself, and have continued to run said machine every harvest up to the present time. This deponent has been familiar
[913] with all the operations of Moore & Haskell's harvesting machine, in Michigan, and only five of said machines have been used in said State. This deponent further states, that the estimates placed on said machine by said Hiram Moore, when offering to sell the same, was never less than sixteen hundred dollars. This deponent further states, that the machine aforesaid requires in its operation a train of sixteen horses; the machine operated for several years past by me, the deponent, is the most perfect in all its parts of all the harvesting machines that I have known constructed under
[914] Moore & Haskell's patent. This deponent further states, that in eighteen hundred and forty-two he used on the harvesting machine a zig-zag sickle. This deponent further states that the object to be accomplished with Moore & Haskell's machine is to save the grain, scattering so much straw as is cut on the ground, and cutting nearly sufficient straw to get all the heads of the grain. This deponent further states, that he has known McCormick's reaper for several years past. This deponent further states, that there is no similarity in the dividing apparatus in the harvesting
[915] machine and McCormick's reaper, except the horizontal board, which in Moore & Haskell's machine extends about two feet further forward from the sickle than in McCormick's reaper. In

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Moore & Haskell's machine the grain is entirely divided, before it comes in contact with the reel or gathering cylinder; and this deponent further states, that there is nothing in Moore & Haskell's machine, which operates like the dividing iron on McCormick's reaper; and this deponent further states, that nothing has ever been used within the knowledge of this deponent, on Moore & Haskell's machine.

[916] It is entirely closed with boards two feet in front of the sickle, while in McCormick's reaper it is entirely open for more than two feet behind the sickle, and entirely open in front of the sickle; and the deponent, *and deponent* further states, that he has known grain to lodge and remain on the dividing side of the Moore & Haskell machine, and sometimes he has seen it pulled up by the roots. This deponent further states, that said Hiram Moore has several times told him, this deponent, that said plaintiff, McCormick, and others, were using substantially his, said Hiram Moore's,

[917] invention, in all the reaping machine, but that he did not intend to prosecute for an infringement of his patent, inasmuch as he wanted first to procure an extension or renewal of his patent by Congress. This deponent further states, that on the 19th of present month of October, he, this deponent, conversed at his, deponent's, house, in Schoolcraft, with said Hiram Moore, and said Hiram Moore asked this deponent if McCormick intended to take testimony here, and deponent replied that said McCormick so intended, and proposed, as this deponent understood, in relation to the dividing iron, and also as to some other points; this deponent,

[918] *this deponent*, at said time and place, also told said Hiram Moore, that said McCormick also proposed to prove by witnesses here, that he, said Hiram Moore, was interested with said defendants, Seymour & Morgan, and this deponent further stated, that he, this deponent, never used a zig-zag sickle, until the year eighteen hundred and forty-two, and further this deponent saith not.

ANDREW Y. MOORE.

(*T.*)

William S. McCormick, being about the age of thirty-seven years, and having been by me first cautioned and sworn to testify the truth,

[919] the whole truth, and nothing but the truth, in the cause aforesaid, I carefully examined the said William S. McCormick, and he did thereupon depose, say, and testify as follows, to wit:—

Interrogatory first. What is your age, residence, and occupation?

Answer first. I am about 37 years old; I am residing in Chicago temporarily, and am a resident of Rockbridge County, Virginia. I am at present, and have been for the last year, principal superintendent of the plaintiff.

Interrogatory second. State, if you know, when the plaintiff

began to manufacture the machine known as McCormick's Virginia reaper?

Answer second. The plaintiff has manufactured and experimented
[920] with his reaper since 1834 to my knowledge.

Interrogatory third. Were you acquainted with the reaper manufactured by the plaintiff prior to the year 1845, and its mechanical construction? If yea, please state, particularly, what were your means of becoming acquainted with said machine; if there were any defects in the working of said machine, state them, and in what part of the machine they were most apparent; describe the dividing apparatus and support to the reel in said machine.

Answer third. I have been intimately connected with the machine
[921] made prior to 1845, and well acquainted with it, as a farmer, from the date of his first experiment, prior to 1834, up to the harvest of 1849. As a farmer, and by way of furnishing the inventor an opportunity of experimenting, I believe I used it each year, from 1834 to 1845; his experiments in constructing and altering his machines having been made in the manufacturing establishment in the premises of my father, and I believe the superintendent of my father's business, and the brother of the plaintiff. There
[922] were important defects in the reaper, as constructed and used prior to 1845, so important that none could appreciate them properly who had not known and used the reaper without them. The dividing apparatus, in combination with the reel, was so arranged as to divide the grain in advance of the reel, and supposed to be necessary; the want of the dividing iron or board, or some arrangement to bear the grain inward and upward, under and within the power of the reel, was seriously felt. This dividing apparatus
[923] before the reel was very imperfect, pressing tangled or leaning grain that came in contact with it down, and preventing its entrance to the cutting apparatus, and into the platform. It was, afterwards, discovered that this dividing apparatus or any support to the reel in advance of the cutting apparatus was seriously in the way. Another essential defect was felt in the want of a seat for the raker, and until a later period than was the case in reference to the defects on the other side. Another difficulty was felt in the operation of the reel on the divider side of the machine *was*, that owing
[924] to the springing of the machine the reel could not be made to work close to the divider; the consequence was, that there was generally a trail left for want of something in principle like the dividing iron.

Interrogatory fourth. State the exact position of the supporter of the reel in the machine made prior to 1845.

Answer fourth. Several inches, I think, eight or ten, in advance of the cutting apparatus.

Interrogatory fifth. What effect had the position of the reel supporter upon the operation of the machine?

[925] Answer fifth. The effect was, that the straw would cling around and accumulate upon this support, and thereby the grain be prevented from getting into the cutting apparatus and the platform, and when the grain was tangled or lodged, which was more or less so in every harvest, the machine would be in its operation very imperfect on that side.

Interrogatory sixth. Are you acquainted with the machines manufactured by plaintiff from the year 1845 until the present time? If yea, state in what respect, if any, the machines made subsequent to 1845 differed from those made before said year. If there were improve-
[926] ments upon said machines, state particularly what they were, and their effect upon the said machines.

Answer sixth. I am acquainted with them, and have been intimately acquainted and connected with the machines during the whole time, part of the time manufacturing and selling them myself; while for the last two years I have been exclusively engaged in the business of manufacturing and selling for the plaintiff and his partner, and to a large extent. After great labor and expense on the part of the plaintiff, he discovered the importance of removing the sup-
[927] port to the reel back of the cutting apparatus; which he did, to the distance of about nine inches, and patented the principle in 1845. Soon thereafter, I think the next season, if not the year 1845, he discovered that there was still not room enough for the free entrance of the grain on to the platform, and removed the support to the back corner of the platform, two feet or upwards further, giving about 18 inches more room; a short time after the second change, I think the following season, the back end of this
[928] support to the reel was raised to a horizontal position, for the purpose of giving still more room on this side, and better admission of the grain on to the platform. About the same time this principle was invented and patented, the plaintiff made the improvement of the dividing iron to bear the grain inward and upward, under the reel, and within the power of the reel, and also the improvement of a bow, inclining outward and upward, for the purpose of bearing off the standing grain; hereby making a perfect separa-
[929] tion of the grain to be cut from the grain to be left standing, in combination with the reel, and preventing a drag or trail, which had always given trouble on account of previous imperfections. These improvements, including the change in the principle of supporting the reel, the dividing iron and bow, were all patented in 1845, and altogether formed a crowning improvement on that side of the machine; the machine up to the present time being constructed substantially in the same way, and continuing to give the highest degree of satisfaction, to my knowledge, in their performance. Prior to 1847, the plaintiff made the improvement called the
[930] raker's seat, which he patented in 1847; the effect of this has been that, before the improvement, the raker had to

walk upon the ground, while it was impossible, walking on the ground, to do the work well; it was so laborious and difficult to do it at all, that the machine could never have been introduced extensively without this improvement, or one of the sort. This raker's seat or stand is a position on and over the finger beam, behind the wheels or gearing, in combination with the reel, with a support or front piece before
[931] the raker, against which he leans when operating; this front piece and the position on the finger beam being the essential parts, while the front piece is connected with the frame by a piece of wood, shaped into a comfortable form for a seat, over which the raker stands with a leg on each side, the reel being shortened and moved forward, to be out of the raker's way, from its former position, and the crooked board called the wheel board so arranged as to press the grain within the operation of the reel as shortened.
[932] The effect of the raker's seat has been that, while the raker could not have been introduced to any great extent without it, the demand for and sale of the machine has been very great with it; and while my opportunities for hearing complaints have been good to the extent of several thousand machines made and sold, the satisfaction given I should think had been almost unparalleled, there having been scarcely a complaint with reference to the raker's seat or the dividing apparatus.

This answer is objected to by the defendants' counsel.

Interrogatory seventh. Have you seen and are you acquainted
[933] with the machines manufactured by Seymour & Morgan? If yea, state in what respects, if any, the dividing apparatus, support to the reel, and raker's seat differ from the same parts of the plaintiff's machine.

Answer seventh. I have seen Seymour and Morgan's machines, manufactured in 1850, in Chicago, in different parts of New York State, and in Wisconsin. I have seen them put together, and in detached parts. I have seen them standing, and have seen them operating, and have examined them very thoroughly, and with reference
[934] to the dividing apparatus and the raker's seat; to my mind, they are almost exactly the same, and the support to the reel almost exactly the same, and do not differ at all in principle. In the dividing apparatus they had, in their machines which I saw, a board to bear the grain inward and upwards under the reel, as the dividing iron in the plaintiff's machine; they had the separator board so arranged as to bear the standing grain outward from the grain to be cut; they had the support to the reel extended back from the cutting apparatus, as in plaintiff's machines; making the dividing
[935] apparatus, in combination with the reel, to my mind, the same in principle, and certainly very nearly the same in mechanical construction and proportion. In the defendant's machine, the raker stands on the finger beam, as in plaintiff's, while in plaintiff's they can sit or stand—generally standing when the grain is

heavy; in both machines there is a front piece, against which the raker leans in operating. In defendants' machine, the front piece is connected with the frame, with an iron rod on each side of the raker,
[936] instead of the connection between the legs of the raker, so arranged as to make a comfortable seat.

Interrogatory eighth. Do you know, and can you state whether the facilities for the manufacture of reapers has been greatly increased by the plaintiff within the last two or three years, or otherwise, and whether the cost of the manufacture of plaintiff's machines has been increased or diminished?

Answer eighth. I have been in the employ of the plaintiff and C. H. McCormick & Co. since November, 1847, and we have been getting the business more and more systematized, and increasing the
[937] facilities for manufacturing in every way, and the expense of manufacturing reapers has been materially reduced.

Interrogatory ninth. State if you know what has been the demand for and sale of plaintiff's machines, and what has been the operation of said machines.

Answer ninth. The demand and sale has been such that 4,000 have been made and sold within three years past, and have given almost universal satisfaction.

Interrogatory tenth. Have you seen and do you know a machine manufactured and sold by Hiram Moore? If yea, state in what respects it resembles in its mechanical construction, with reference to the dividing apparatus and raker's seat, the plaintiff's machine.

Answer tenth. I have seen Hiram Moore's machine, of
[938] Michigan; it has no raker's seat, nor is there anything about it resembling the dividing apparatus in the plaintiff's machine.

Cross-examined by Grant Goodrich, Esq., counsel for defendants.

Interrogatory first. How do you know the machine you have spoken of to have been Moore's machine, or manufactured by him; and where did you see it?

Answer first. I saw it in the possession of Andrew T. Moore, of
[939] Michigan; I went from Chicago to see it; and all I know of its being Hiram's machine was from what Andrew told me.

WM. S. McCORMICK.

Subscribed and sworn to, this 18th day of October, 1851, before me,

GEO. W. MEEKER,
Com'r Circuit Court U. S., District of Illinois.

(Opened in Court, and filed Oct. 22d, 1851.)

(*U.*)

No. 4216.

The United States of America, to all to whom these Letters Patent shall come:

Whereas, Ferdinand Woodward, Upper Freehold, N. J., has alleged that he has invented a new and useful improvement in reaping machines, which he states has not been known or used before his ap-
[940] plication; has affirmed that he is a citizen of the United States, that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not to the best of his knowledge and belief been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

[941] These are, therefore, to grant according to law to the said Ferdinand Woodward, his heirs, administrators or assigns, for the term of fourteen years from the thirtieth day of September, one thousand eight hundred and forty-five, the full and exclusive right and liberty of making, constructing, using and vending to others to be used, the said improvement, a description whereof is given in the words of the said Ferdinand Woodward in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent,
[942] and the Seal of the Patent Office has been hereunto affixed. Given under my hand at the City of Washington, this thirtieth day of September, in the year of our Lord, one thousand eight hundred and forty-five, and of the
[L. S.] independence of the United States of America, the seventieth.

N. P. TRIST,
Acting Secretary of State.

Countersigned and sealed with the Seal of the Patent Office.

EDMUND BURKE,
Commissioner of Patents.

The Schedule referred to in these Letters Patent, and making part of the same.

Be it known that I, Ferdinand Woodward, of Cream Ridge, in the Township of Upper Freehold, County of Monmouth, and State of
[943] New Jersey, have invented a new and useful machine for cutting grain, grass, &c., and I do hereby declare that the

following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings of the same, making a part of this specification in which:

Figure 1 represents a bird's eye view of the machine.

Figure 2, a side view.

Figure 3, front and side view of the gearing.

Figure 4, a section of the steel blades or cutters.

Figure 5, a perspective view of the sheaf-box and the platform on which the grain falls.

[944] Figure 6 represents a part of the frame-work or timber directly under, or cross-wise of the perch and the critch D, also the uprights I, I.

Figure 7, rear end of the sheaf-box.

Figure 8, section showing the apparatus for adjusting the position of the cutters.

Figure 9, section of the sheaf-box.

Figure 10, the rake.

A, *a*, represents the rear and front axles; B, the perch; c, c, c, c, four ordinary or light carriage wheels.

[945] On the axles *A*, *a*, on which the machine moves, the right hand front wheel has a cog-wheel X, Figs. 1 and 3, of proper size attached to it on the inner or left side for giving motion to other cog-wheels, and to the machinery and cutters. D, D, crutch or braces. E, E, swingle trees to which the team is to be attached. F, a platform on which a person stands at the windlass G, or guiding wheel, to guide the machine. The platform F, is supported by a bolt passing through its centre, and the centre of the hinder axle and the perch also resting on small wheels or rollers, C, let in the axle near

[946] the circumference of the platform, F, G, guiding wheel or windlass. 4, tiller ropes or bands coiled around the windlass, then passing down and around friction pulleys, p, near the perch and front edge of the platform, and under the platform F, to hooks, 5, 5, placed through the hind axletree, A, near the hub or shoulder of the axle, H, H, the two side timbers of the framework, which pass horizontally below the front axle or near the wheels C, C, from a convenient distance in the rear of the front axle, to the front part

[947] of the machine, supporting the platform L, on which the raker stands; the platform m, on which the grain or grass falls from the cutters, and the grain or sheaf box, N, also the cross-bar or timber, on which the cutters or shear blades are fastened, I^1, I^2, I^3, timbers fastened crosswise of machine, I^4, is placed directly over, and extending over the front of the axle *a*, I^2, directly across and under the perch B, and crutch D, and is bolted or fastened to

[948] them, I^3 directly under I^2, and connected to it by two upright swords, I, I, Fig. 6, which are passed through mortices in bar I^3, and made fast by pins at the required height. Said swords also pass through mortices in bar I^2, which is permitted to

pass up and down for the purpose of elevating or depressing the cutters, and is secured by pins placed through holes in the swords, I, I, secured or moved at pleasure, as represented in Figure 6; the cutters or blades, Q, Figs. 1 and 4, may be raised still higher, by placing
[949] blocks under I', and an axle, a, o, o, o, o, sides and back of the platform, to prevent the grain from falling off the platform, composed simply of thin boards nailed to corner, and other upright strips fastened in mortices in the platform, or there may be a bow bent over the sides and passed through a hole in the back and likewise through the bottom strip, on which the hand to separate the standing grain, is placed. P, the side of the box into which the grain
[950] is thrown, see Figs. 1, 5, and 9. The box may be made of pine or other light boards, consisting of three pieces, or bottom and two sides, of sufficient dimensions to contain a large sheaf of grain; which box is to be fastened by means of hinges attached to the end of the bottom of the box, and to the bar or timber on which the cutters, g, are fixed, and is supported in the rear by a bent iron rod, 1, in Fig. 5, and cord 2 passing over pulley 3, with weight 4 attached, which is of sufficient gravity to support the rear
[951] end of the box, when empty or nearly so, but not when the sheaf is in. In case the stubble should be very stiff it will be found necessary to attach a temporary board to the bar at the front end of the box by hinges, and to pass back immediately under the box, to be pressed down by means of a spring or weight, which will allow the box to play freely. This box may be two feet or more in width, and from one to two inches depth at the front end, and from three to eight inches at the back, and may be composed of
[952] boards, tin, zinc, or sheet iron, or any suitable material. g, Fig. 4, the cutters, blades or shears, made from cast steel plates of one-eighth of an inch or less in thickness, the shape represented in the drawing 1 and 2, Fig. 4; the blades are ground to an edge and tempered on the cutting part, the upper blade, 2, Fig. 4, being about seven inches long, and one and a quarter inch wide in the middle, and $\frac{5}{8}$ of an inch at the end, with screw holes, as repre-
[953] sented in the drawing; the lower blade about $5\frac{1}{2}$ inches long, with three inches edge, as seen in Fig. 4, with a notch, 4, cut out of one side, of about $\frac{3}{4}$ of an inch; these may be made $2\frac{1}{2}$ or 3 inches wide on the square part, and 1 inch or wider at the front or cutting edge, provided they taper out to a point.

The upper blade is fastened to the lower by a rivet or a screw, passing through both and into the timber on which the blades are fastened.

R, the connecting rod, fig. 1, to which the rear end of all the up-
[954] per blades or cutters are fastened, either by screws, rivets, bolts, or pins, or other suitable means, and by which they are worked and put in motion. w, Figs. 2 and 9, wheels or runners, which run in metal or wooden clips, fastened near the ends of the

sills, H, H, for the purpose of raising the blades or cutters, g, in case of irregularity in the ground; which wheels when they strike the ground will cause the frame to raise by raising the bars I^3, Figs.
[955] 1, 3, and 6, or by raising the bar I^1, Fig. 1, from the axle. *a*, V, hands or separators to guide the grain to the blades or cutters, g, and separate it from that which is to be left standing; they are to be fastened to the side strips by screw bolts or otherwise, Figs. 1, 2, and 9, and will allow being turned outward, so as to make the machine cut from one to two feet wider than the knives or range of blades, g; in case the grain should stand thin, the handles may be made of different lengths, as occasion may require, the strips,
[956] P, may be made of any good inch board, about 3 inches wide, and made fast to the end elevations of platform, m.

The gearings consist of a cog wheel, X, on the right fore cog-wheel C, of about sixteen inches diameter, which gives motion to a train of cog wheels of various diameters, represented in the drawing, figures 1 & 3; on the out end of the shaft of the lower pinion *W*, is a small vertical bevel wheel, *o*, which gears into a horizontal bevel wheel of
[957] the same diameter as the other, and in which is a pin e, about one inch from the centre, or of sufficient distance to give the blade sufficient sweep. Upon this pin the pitman is placed secure, and fastened at its other end to the lever Y, under the platform M, which is denoted by the dotted lines; the lever Y is fastened securely to one of the cross bars under the platform by a bolt or pivot, and the forward end by a joint or hinge to the connecting rod immediately under the centre of the rear ends of the upper range of cutters or blades.

[958] These cog wheels are geared sufficiently sharp to cause the blades to clip once in going forward the length of their cutting part. J, J, fig. 2, four uprights connecting the sills H, H, with the bars I^2 and I^3. K, K, light bars or straps of metal passing over the cross bar I^1, fig. 1, near its end, and secured in front to the sills H, H, and in the rear to the cross bar I^3.

The raker stands upon the platform L, and as the grain is cut and
[959] falls upon the platform M, he with the fork or rake R^2, conveys it to the hinged box N, called the sheaf-box; and when a quantity is accumulated therein sufficient to overcome in weight the friction of the cord and pulley, and weight 4, by which the rear end of the box is held up, the rear end of the box will drop until it strikes the ground, causing the bottom to assume an angle of about 40 or 45 degrees, when the straw will slide or roll down over it to the ground in the form of a gavel. The weight then descends, and the bottom
[960] rises to its former position. Should the grain hang in the box, a slight touch of the rake will start it therefrom.

What I claim as my invention, and desire to secure by letters patent, is the combination of a sheaf-box with the platform, into

which the grain is thrown before being deposited upon the ground from the platform.

FERDINAND WOODWARD.

Witnesses:
JAMES S. LAWRENCE,
PHEBE ANN LAWRENCE.

(*V.*)

The United States of America, to all to whom these letters patent shall come:

Whereas, Hiram Moore and John Hascall, citizens of the United
[961] States, have alleged that they have invented a new and useful improvement in the harvesting machine for mowing, threshing, and winnowing grain, at one operation; which improvement, they state, has not been known or used before their application; have made oath that they do verily believe that they are the true inventors or discoverers of the said improvement; have paid into the treasury of the United States, the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the
[962] said improvement, and praying that a patent may be granted for that purpose.

These are therefore to grant according to law, to the said Hiram Moore and John Hascall, their heirs, administrators, or assigns, for the term of fourteen years, from the twenty-eighth day of June, one thousand eight hundred and thirty-six, the full and exclusive right and liberty of making, constructing, using and vending to others to be used, the said improvement, a description whereof is given in the words of the said Hiram Moore and John Hascall themselves, in the schedule hereto annexed, and made a part of these presents.

[963] In testimony whereof, I have caused these letters to be made patent, and the seal of the United States to be hereunto affixed.

[SEAL.] Given under my hand at the City of Washington, this twenty-eighth day of June, in the year of our Lord one thousand eight hundred and thirty-six, and of the Independence of the United States of America the sixtieth.

By the President:

ANDREW JACKSON.

JOHN FORSYTH,
Secretary of State.

City of Washington, to wit:

I do hereby certify, that the foregoing letters patent were delivered to me on the twenty-eighth day of June, in the year of our
[964] Lord one thousand eight hundred and thirty-six, to be examined; that I have examined the same and find them con-

formable to law; and I do hereby return the same to the Secretary of State within fifteen days from the date aforesaid, to wit: on this twenty-eighth day of June, in the year aforesaid.

B. F. BUTLER,
Attorney-General of the United States.

The schedule referred to in these letters patent, and making part of the same, containing a description, in the words of the said Hiram Moore and John Hascall themselves, of their improvement in the
[965] harvesting machine, for mowing, threshing, and winnowing grain, at one operation.

To all whom it may concern:

Be it known, that we, Hiram Moore and John Hascall, of Kalamazoo County, Michigan, have invented certain improvements in the machinery for harvesting grain, by means of which wheat or other grain may be cut, threshed, or winnowed, each of the operations going on simultaneously, the whole of the necessary motions being derived from the animal or other power employed to propel the machinery; and we do hereby declare that the following is a full
[966] and exact description thereof; reference being had to the drawings which accompany and make a part of this specification.

In describing this machine, the dimensions which we shall give, are taken from one which we have constructed, and which we have found to answer well in practice. It will be manifest, however, that these dimensions are not to be considered as absolute, but merely as an approximate guide to others, any variation in this particular not changing the character of the machine.

The mode of gearing also, and the number of teeth in the wheels employed, the substitution of straps or belts for geared wheels, may be
[967] resorted to according to the fancy or preference of the person constructing it.

A. In fig. 1, is the frame which is to support the whole structure, and is seventeen feet long and fifteen broad, from outside to outside. B, are uprights attached to the frame or platform, and connected at top by the cap piece, C. The wheels D, bear upon the ground like cart wheels, and by their friction thereon give motion to the cutting, threshing, and winnowing apparatus, whenever the machine is drawn forward. These wheels are seven feet in diameter, and the filly of
[968] that which carries the gearing is broad, and should it be found liable to slide on the ground, it is to be armed with spikes projecting from its rim, which will prevent this from taking place.

The gudgeon of this wheel is fixed firmly in its hub, and revolves in boxes in the upright B; the other wheel D, turns in an iron axletree, firmly attached to one of the uprights. B, E, is a cog-wheel four feet and four inches in diameter, and gears into a pinion F,

about eleven inches in diameter. The wheel, E, is attached to the
[969] spokes of the wheel, D, and the gudgeon of the pinion may be supported by a stud or brace attached to the frame through the intermedium of this pinion. The other parts of the machinery receive their motions, and as it is necessary to allow the machine to be drawn forward while the operating parts are at rest, this pinion is thrown out of and into gear, by means of a forked lever, in a manner well known to machinists. H, is a band-wheel on the same shaft with the pinion F, and is three feet in diameter. I, is
[970] what we denominate the gathering cylinder, to be presently described. This gathering cylinder is turned by a band from the wheel H, as seen in the drawing; which band must be crossed, when the pinion F is geared upon the outside of the wheel E; when the machine is drawn by animal power, the shaft or pole being attached to the frame at K, is connected with the fore running wheels, L, about two feet in diameter, or a small sled or sleigh may be substituted for these fore running wheels.

[971] Fig. 2, shows the cutting part of the apparatus, which in fig. 1, is hidden by the gathering cylinder. M, M, are pieces denominated fingers, which may be of wood, two feet in length, an inch thick, and three or four inches deep. They project from the front of the platform, and are pointed so as readily to admit the stalks or straws of the grain to pass between them up to the cutter or cutters. The cutters may be made as follows: There may be a fixed plate of steel extending along and projecting from the front of the platform or frame, immediately under, through, or on top of the
[972] inner ends of the fingers, having pointed teeth resembling saw-teeth, with a second steel plate, furnished with similar teeth, made to vibrate longitudinally on the former, by means of a crank or otherwise, so as to cut the stalks or straws between them; or the vibrating teeth, may be made to turn in pins individually like scissors, one sliding rod giving motion to the whole. This mode of constructing the cutters somewhat resembles those already in use for cutting grass or grain. We do not, however, prefer either of these
[973] modes for constructing the cutters, believing the following, which is of our own invention, is better.

The fixed toothed plate, N, N, may be made as described with saw-teeth, and against this, near the roots of the teeth, a straight plate of steel is made to vibrate longitudinally. The cutting edge of this plate is like that of a sycle, and by aid of the gathering cylinder, this cutter effects the purpose intended very perfectly. When the side edge vibrates through the fingers, the fixed plate, N, N, may be dispensed with.

The gathering cylinder, I, is four feet in diameter, twelve feet in
[974] length. From the surface, project a considerable number of pointed teeth, of wood or metal, which teeth may be from two to six inches in length; from twelve to twenty rows of such teeth

extending along the cylinder five or six inches asunder will be found sufficient. The cylinder is so placed that the ends of these teeth project forward nearly as far forward as the points of the fingers. They consequently catch hold of the heads of the grain, bending it down, carrying it between the cylinder, and the front of the platform,
[975] and holding it against the cutter. A concave is formed under this cylinder, allowing the teeth of the cylinder to come nearly into contact therewith. As the cut grain is conducted back by the gathering cylinder, it is delivered on to an endless revolving apron, O, O. The revolving apron passes around shafts in the usual manner. The shafts are constructed as may be seen in the model one, or both of the shafts being driven by suitable gearing. To insure the regular motion of the apron and to keep it in its place, its edges are furnished with straps or belts of leather, or other suita-
[976] ble material, perforated with holes, which pass over the teeth of the guide wheels on the end of the revolving shafts, which shafts are constructed of round bars of iron, and between the guide-wheels are filled with loose rollers, from four to eight inches in diameter, one foot in length, which serve to regulate the centre of the apron.

The grain is carried upon the revolving apron to the threshing apparatus, which is constructed with a cylinder or cylinders coupled together with concave constructed in the usual manner. We drive the threshing cylinder by means of a spur wheel, A, on the same
[977] shaft with the band wheel H, and pinion F. The gearing being such as to give to the threshing cylinder, I, the required velocity, nay the periphery moving at the rate of about five thousand feet per minute, when the horses travel at their usual speed.

The threshed grain and straw are thrown out from between the cylinder and concave, at an elevation of forty-five degrees, and strike against a cover or casing placed above them, for the purpose of causing
[978] them to fall upon a sieve or a revolving screen, R R, made of netting passing around rollers, which netting screw allows the grain to fall through, and deliver the straw at the back of the machine.

The trough into which the grain falls, has a concave bottom, for a reason which will be apparent. Instead of netting, the rollers may have numerous grooves turned in them, to receive bands of cords.

The grain as it falls through into the concave trough, is winnowed by a revolving fan, and the shaft, furnished by spiral flights or scrapers, which turn near the bottom of the concave trough, carries the grain to one end, where it may be raised by elevators, and be poured out into boxes or bags, to be tended by an assistant upon the platform. These parts may be geared so as to be driven by the spur wheel A, as will be obvious to any competent machinist. R is a lever to raise the gathering cylinder, cutting apparatus, &c., when any obstructions or the height of the grain render it necessary or desirable so to do.

The timber S, to which the forewheels and pole are attached, is separated from and extends under the main frame, to which it is hinged
[980] at K, near the wheel D; a person standing upon the platform and depressing the lever R, will therefore raise the parts mentioned, the standards which support its fulcrum, being attached to the timber S.

If suitable teeth for threshing are put into the gathering cylinder and its concave, the said cylinder will answer the double purpose of gathering and threshing the grain, or if the said cylinder is covered with perforated sheet iron and its concave is sheeted with the same, it will also answer the purpose, and in either case the other threshing apparatus may be dispensed with.

[981] Having thus fully described the construction and operation of our said machine, we do hereby declare, that we do not rest our claims to invention upon any of the parts thereof, taken individually, with the exception of the gathering cylinder, and side edge cutter, operating in the manner and for the purposes described. We also claim the manner in which we have combined them with the other parts of the machinery, so as to carry on the cutting threshing, and cleaning of the grain, simultaneously; but intending, how-
[982] ever, to limit ourselves to the precise manner of arranging the gearing and other minor parts as herein shown, but to vary the same as we may think proper, while the mode of action remains substantially the same.

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Patent Office,
[983] Received, 30th December, 1838, and recorded anew in that office in conformity to the Act of Congress, passed 3d March, 1837.

HENRY L. ELLSWORTH,
Commissioner of Patents.

Filed July 5, 1855.